



May 23, 2017

Mr. Karen Buerki  
On-Scene Coordinator  
U.S. Environmental Protection Agency, Region 4  
61 Forsyth Street, 11th Floor  
Atlanta, GA 30303

**Subject:** Colonial Pipeline Letter Report  
Pelham, Shelby County, Alabama  
Contract Number (No.) EP-S4-14-03  
TDD No. TT-03-015

Dear Ms. Buerki:

The Tetra Tech, Inc. (Tetra Tech) Superfund Technical Assessment and Response Team (START) is submitting this report for multi-media field sampling activities conducted during an emergency response involving a gasoline pipeline fire located in Pelham, Shelby County, Alabama. This report includes four enclosures and two attachments. Enclosure 1 contains a figure illustrating the site location and the site layout with sampling locations. Enclosure 2 contains a summary table of analytical data. Enclosure 3 contains the field logbook notes. Enclosure 4 contains the validated laboratory data packages. Enclosure 5 contains the Scribe database with the multi-media sampling data. Attachment 1 contains email correspondence of comparison criteria provided by the U.S. Environmental Protection Agency Region 4 (EPA) and the Alabama Department of Environmental Management (ADEM). Attachment 2 contains the laboratory analytical data packages.

## RESPONSE ACTIVITIES

On October 31, 2016, the National Response Center (NRC) notified the EPA that a Colonial Pipeline contractor struck and ruptured a transmission gasoline pipeline while excavating it to make repairs required due to a previous pipeline rupture in September (see Figure 1 in Enclosure 1). The EPA On-Scene Coordinator (OSC) Karen Buerki deployed to the site and mobilized Tetra Tech START to assist with monitoring site activities and conducting multi-media split sampling with Colonial Pipeline's contractor, Environmental Planning Specialists (EPS).

From November 1 through November 6, 2016, EPS collected surface water and sediment samples from a pond located southeast of the spill area and from locations upstream and downstream of the spill area along the Cahaba River and Shades Creek (see Figure 2 in Enclosure 1). From November 2 through November 4, 2016, Tetra Tech START collected 12 split surface water samples from nine locations and five split sediment samples from five locations with EPS (see Figure 2 in Enclosure 1). The samples were submitted to TestAmerica Laboratories, Inc., located in Pensacola, Florida, for rapid turnaround analyses of total petroleum hydrocarbons-gasoline range organics (TPH-GRO) and benzene, toluene, ethylbenzene, and total xylenes (BTEX). Analytical results of the surface water samples showed that TPH-GRO and BTEX concentrations were below laboratory reporting limits for all samples (see Table 1 in Enclosure 2). Analytical results of the sediment samples showed that TPH-GRO and BTEX concentrations were below the laboratory reporting limits for all samples except one detection of toluene at an estimated concentration of 8.2 micrograms per kilogram in the sample collected from the pond located southeast of the spill area (see Table 2 in Enclosure 2).

Mr. K. Buerki  
May 23, 2017  
Page 2

The analytical results for the surface water samples were compared to the EPA Region 4 Ecological Screening Levels (ESL) for freshwater and the Human Health Criteria (HHC) for the consumption of fish provided by ADEM, Water Division. The analytical results for the sediment samples were compared to the EPA Region 4 Ecological Screening Levels for freshwater sediment. The comparison values were provided in September 2016 by EPA and ADEM in response to a previous pipeline rupture involving Colonial Pipeline. Comparison of the Tetra Tech START and Colonial Pipeline analytical results to the EPA and ADEM comparison criteria indicated the results were below the ESL and HHC. The data for the samples collected by Tetra Tech were uploaded into the EPA's SCRIBE database named Colonial Pipeline.MDB located at SCRIBE.net.

EPA and Tetra Tech START demobilized on November 6, 2016.

If you have any questions or need additional copies of this report, please call me at (678) 775-3106.

Sincerely,



Paul Prys  
START IV Project Manager



Andrew F. Johnson  
START IV Program Manager

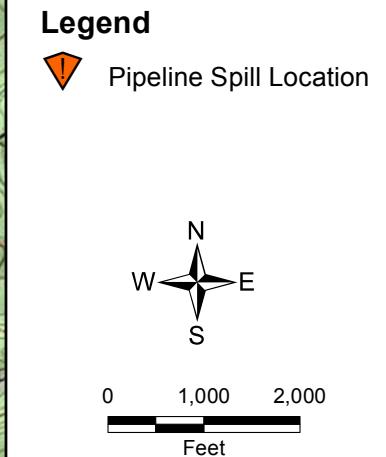
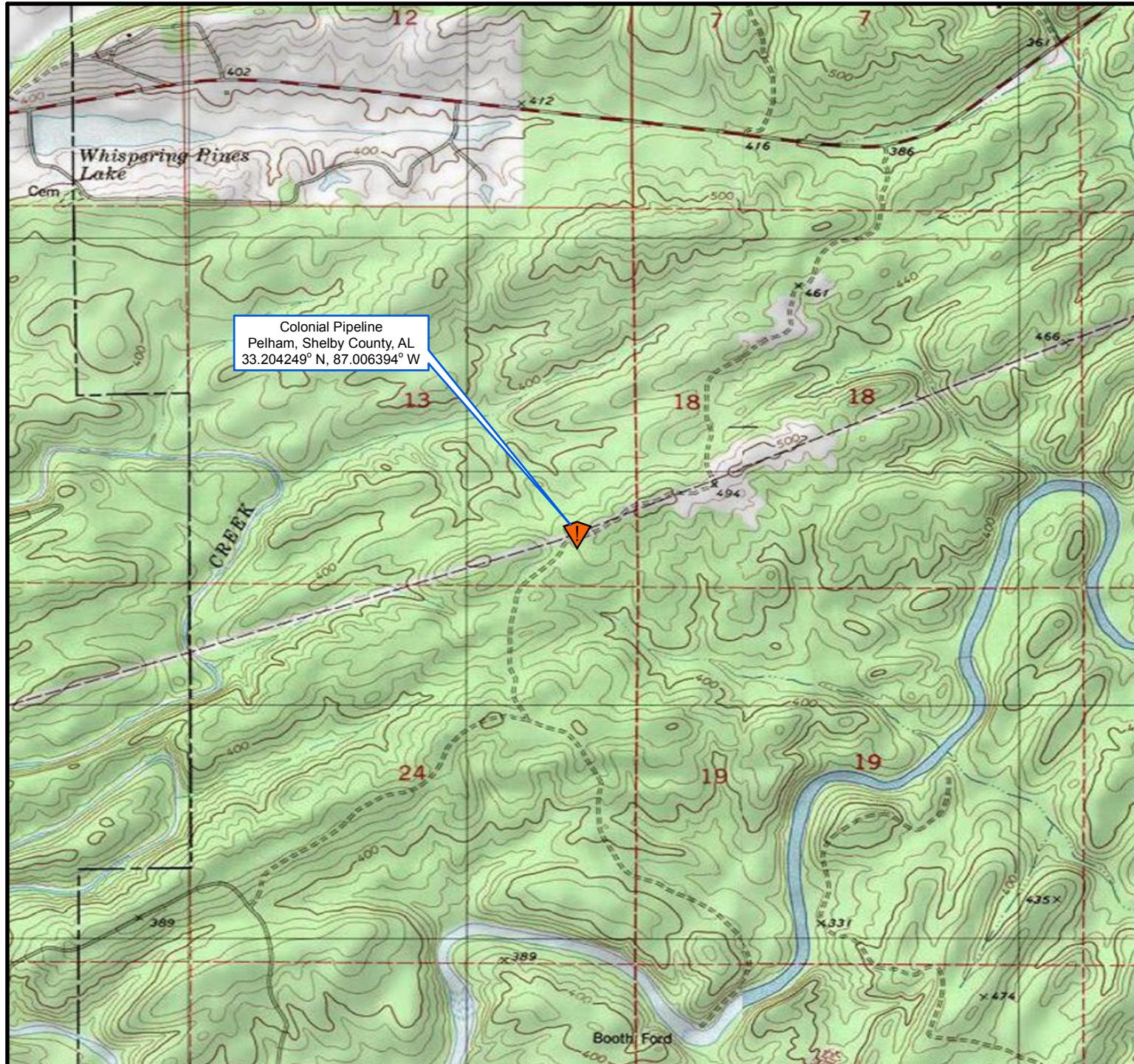
Enclosures (5)  
Attachment (1)

cc:      Katrina Jones, EPA Project Officer  
          Angel Reed, START IV Document Control Coordinator

**ENCLOSURE 1**

**FIGURES**

(2 Pages)



United States  
Environmental Protection Agency  
Region 4

**FIGURE 1**

Site Location

**TDD Name:** Colonial Pipeline

**TDD No.:** TT-03-015

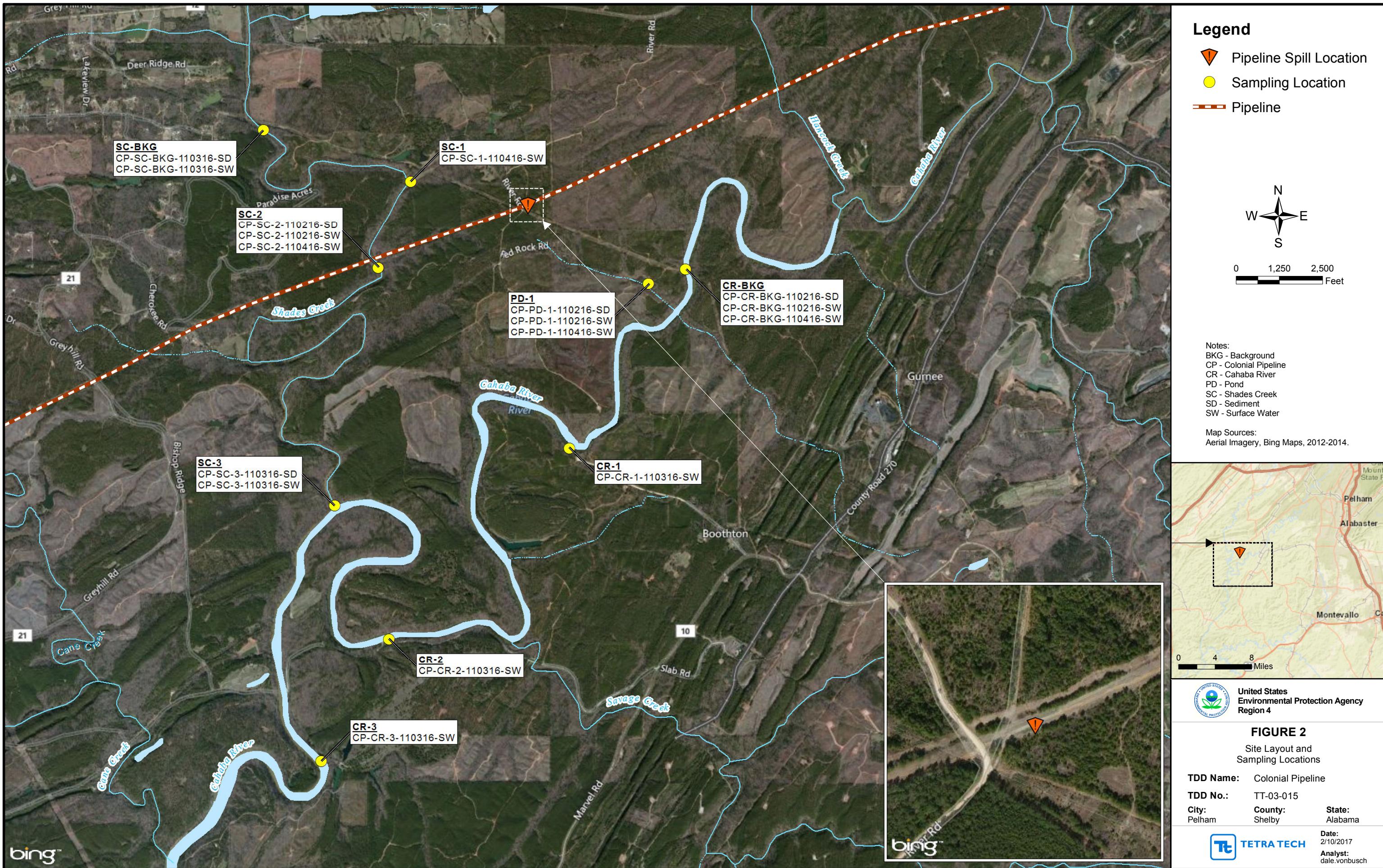
**City:**  
Pelham

**County:**  
Shelby

**State:**  
Alabama

Date:  
2/10/2017  
Analyst:  
dale.vonbusch

**TETRA TECH**



**ENCLOSURE 2**

**TABLES**

(3 pages)

**Table 1**  
**Split Surface Water Samples**  
**Comparison of Analytical Results**

Location	Date	TPH (GRO) (mg/L)		Benzene (µg/L)		Toluene (µg/L)		Ethylbenzene (µg/L)		Total-Xylene (µg/L)		Location Notes	
	Ecological Screening Value (Acute) <sup>1</sup>	NE		700		560		550		240			
	Ecological Screening Value (Chronic) <sup>1</sup>	0.114		160		62		61		27			
	Consumption of Fish <sup>2</sup>	NE		15.47		8,722.74		1,244.44		NE			
		EPA	CP	EPA	CP	EPA	CP	EPA	CP	EPA	CP		
CP-CR-BKG	11/2/2016	0.1U	0.5U	1.0U	1.0U	5.0U	1.0U	1.0U	1.0U	5.0U	2.0U	Background location on the Cahaba River	
	11/4/2016	0.1U	0.5U	1.0U	1.0U	5.0U	1.0U	1.0U	1.0U	5.0U	2.0U		
	11/6/2016	NA	0.5U	NA	1.0U	NA	1.0U	NA	1.0U	NA	2.0U		
CP-CR-1	11/1/2016	NA	0.5U	NA	1.0U	NA	1.0U	NA	1.0U	NA	2.0U	Location 1 on the Cahaba River	
	11/3/2016	0.1U	0.5U	1.0U	1.0U	5.0U	1.0U	1.0U	1.0U	5.0U	2.0U		
	11/5/2016	NA	0.5U	NA	1.0U	NA	1.0U	NA	1.0U	NA	2.0U		
CP-CR-2	11/1/2016	NA	0.5U	NA	1.0U	NA	1.0U	NA	1.0U	NA	2.0U	Location 2 on the Cahaba River	
	11/3/2016	0.1U	0.5U	1.0U	1.0U	5.0U	1.0U	1.0U	1.0U	5.0U	2.0U		
	11/5/2016	NA	0.5U	NA	1.0U	NA	1.0U	NA	1.0U	NA	2.0U		
CP-CR-3	11/1/2016	NA	0.5U	NA	1.0U	NA	1.0U	NA	1.0U	NA	2.0U	Location 3 on the Cahaba River	
	11/3/2016	0.1U	0.5U	1.0U	1.0U	5.0U	1.0U	1.0U	1.0U	5.0U	2.0U		
	11/5/2016	NA	0.5U	NA	1.0U	NA	1.0U	NA	1.0U	NA	2.0U		
CP-PD-1	11/2/2016	0.1U	0.5U	1.0U	1.0U	5.0U	1.0U	1.0U	1.0U	5.0U	2.0U	Pond location southeast of the spill area	
	11/4/2016	0.1U	0.5U	1.0U	1.0U	5.0U	1.0U	1.0U	1.0U	5.0U	2.0U		
	11/6/2016	NA	0.5U	NA	1.0U	NA	1.0U	NA	1.0U	NA	2.0U		
CP-SC-BKG	11/3/2016	0.1U	0.5U	1.0U	1.0U	5.0U	1.0U	1.0U	1.0U	5.0U	2.0U	Background location on Shad's Creek	
	11/5/2016	NA	0.5U	NA	1.0U	NA	1.0U	NA	1.0U	NA	2.0U		
CP-SC-1	11/4/2016	0.1U	0.5U	1.0U	1.0U	5.0U	1.0U	1.0U	1.0U	5.0U	2.0U	Location 1 on Shad's Creek	
	11/6/2016	NA	0.5U	NA	1.0U	NA	1.0U	NA	1.0U	NA	2.0U		
CP-SC-2	11/2/2016	0.1U	0.5U	1.0U	1.0U	5.0U	1.0U	1.0U	1.0U	5.0U	2.0U	Location 2 on Shad's Creek	
	11/4/2016	0.1U	0.5U	1.0U	1.0U	5.0U	1.0U	1.0U	1.0U	5.0U	2.0U		
	11/6/2016	NA	0.5U	NA	1.0U	NA	1.0U	NA	1.0U	NA	2.0U		
CP-SC-3	11/3/2016	0.1U	0.5U	1.0U	1.0U	5.0U	1.0U	1.0U	1.0U	5.0U	2.0U	Location 3 on Shad's Creek	
	11/5/2016	NA	0.5U	NA	1.0U	NA	1.0U	NA	1.0U	NA	2.0U		

**Table 1**  
**Split Surface Water Samples**  
**Comparison of Analytical Results**

**Notes:**

- <sup>1</sup> Ecological screening values were provided by EPA SSS in an email dated September 16, 2016.
- <sup>2</sup> ADEM provided State comparison criteria for the protection of human health in the water in an email dated September 19, 2016.
- ADEM Alabama Department of Environmental Management
- BKG Background
- CP Colonial pipeline
- CR Cahaba River
- EPA U.S. Environmental Protection Agency
- GRO Gasoline range organics C6--C10
- mg/L milligrams per liter
- NA Not applicable
- NE Not established
- PD Pond
- SC Shades Creek
- SSS Scientific Support Section
- TPH Total petroleum hydrocarbons
- U The analyte was analyzed for, but was not detected at or above the associated value (reporting limit).
- µg/L micrograms per liter

**TABLE 2**  
**SPLIT SEDIMENT SAMPLES**  
**COMPARISON OF ANALYTICAL RESULTS**

Location	Date	TPH (GRO) (mg/kg)		Benzene (µg/kg)		Toluene (µg/kg)		Ethylbenzene (µg/kg)		Total-Xylene (µg/kg)		Location Notes
	Freshwater Sediment Screening Value <sup>1</sup>	12		113		145		272		103		Background location on the Cahaba River
		EPA	CP	EPA	CP	EPA	CP	EPA	CP	EPA	CP	
CP-CR-BKG	11/2/2016	0.11U	0.36U	1.1U	0.72U	5.3U	0.72U	1.1U	0.72U	5.3U	1.44U	Background location on the Cahaba River
CP-CR-1	11/1/2016	NA	0.23U	NA	0.47U	NA	0.47U	NA	0.47U	NA	0.94U	Location 1 on the Cahaba River
CP-CR-2	11/1/2016	NA	0.34U	NA	0.68U	NA	0.68U	NA	0.68U	NA	1.36U	Location 2 on the Cahaba River
CP-CR-3	11/1/2016	NA	0.25U	NA	0.49U	NA	0.49U	NA	0.49U	NA	0.98U	Location 3 on the Cahaba River
CP-PD-1	11/2/2016	0.17U	1.1U	1.7U	2.1U	<b>8.2J</b>	2.1U	1.7U	2.1U	8.4U	4.2U	Pond location southeast of the spill area
CP-SC-BKG	11/3/2016	0.094U	0.37U	0.94U	0.74U	4.7U	0.74U	0.94U	0.74U	4.7U	1.48U	Background location on Shad's Creek
CP-SC-1	11/4/2016	NA	0.52U	NA	1.0U	NA	1.0U	NA	1.0U	NA	2.0U	Location 1 on Shad's Creek
CP-SC-2	11/2/2016	0.11U	0.44U	1.1U	0.88U	5.4U	0.88U	1.1U	0.88U	5.4U	1.76U	Location 2 on Shad's Creek
CP-SC-3	11/3/2016	0.11U	0.29U	1.1U	0.59U	5.6U	0.59U	1.1U	0.59U	5.6U	1.18U	Location 3 on Shad's Creek

**Notes:**

- <sup>1</sup> Ecological screening values were provided by EPA SSS in an email dated September 16, 2016.
- BKG Background
- CP Colonial pipeline
- CR Cahaba River
- EPA U.S. Environmental Protection Agency
- GRO Gasoline range organics C6--C10
- J The analyte was positively identified; the associated value is an estimated concentration of the analyte in the sample.
- mg/kg milligrams per kilogram
- NA Not applicable
- PD Pond
- SC Shad's Creek
- SSS Scientific Support Section
- TPH Total petroleum hydrocarbons
- U The analyte was analyzed for, but was not detected at or above the associated value (reporting limit).
- µg/kg micrograms per kilogram
- BOLD** Constituent detected above the laboratory reporting limit

**ENCLOSURE 3**  
**LOGBOOK NOTES**  
(14 Pages)

TT-03-015

Colonial Pipeline



Rite in the Rain®

ALL-WEATHER  
**UNIVERSAL**

Nº 371FX

Logbook 1

MADE IN TACOMA  
— SINCE 1916 —

Rite in the Rain®  
— DEFYING MOTHER NATURE =

1 Name \_\_\_\_\_

2 Address \_\_\_\_\_

3 Phone \_\_\_\_\_

4 Project \_\_\_\_\_

5

6



RiteintheRain.com

CONTENTS

Colonial Pipeline

REFERENCE

PAGE

DATE

TOD- TT-03-015

310 OPPORTUNITY DRIVE, PELHAM 10/31/2016  
(Incident Command Center)

EPA OSC KAREN BURKE

EPA OSC RICK JARDINE

EPA OSC GREG HANPER

EPA OSC JASON BOOTH

TE START Paul Pray

TE START Chris Jones

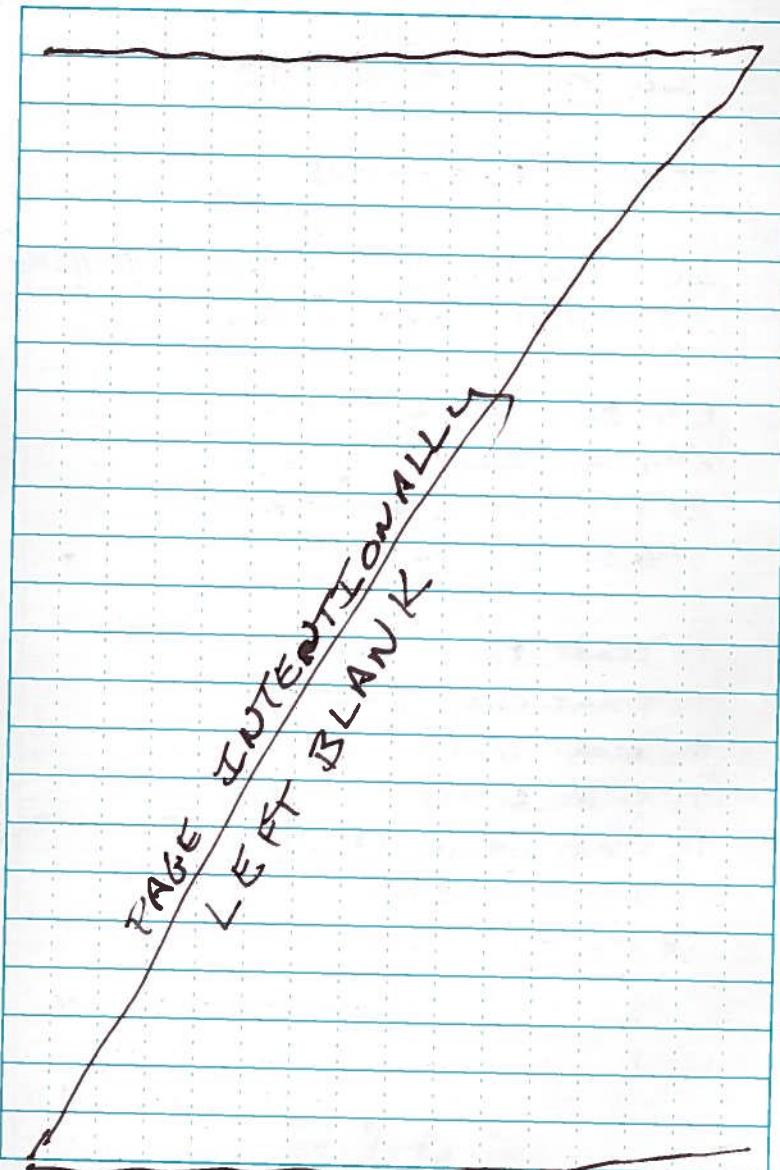
TE START Brian Craft

TE START Carter Owens

TE START George Kelly

TE START DJ Elder

TE START Mo Reed/One



Scale: 1 square = \_\_\_\_\_

October 31, 2016 Colonial GEDIE KRULL

19:38 - GEDIE KRULL, TETRA TECH, ARRIVED AT 310 OPPORTUNITY DR PELHAM AL .

20:05 - 71° Clear

20:25 - Captured 7 photos of operations Posted on wall of cafeteria. Pictures taken from wall in direction left to Right.

20:53 - Captured 16 photos of operations Posted on wall of cafeteria. Pictures taken from left to Right. Taken for current updates.

21:24 - Captured 6 photos of operations Posted on wall of cafeteria. Pictures taken from left to Right. Taken for current updates.

21:48 - Captured 6 photos, keep current. Also captured 11 photos of pipeline printouts along wall; from left to Right.

21:58 - Paul Prys, Tetra Tech, on site.

22:31 Captured 6 photos, keep current.

00:26 Confirmed with Diane Grasse, Security Manager that we had gained access to restricted

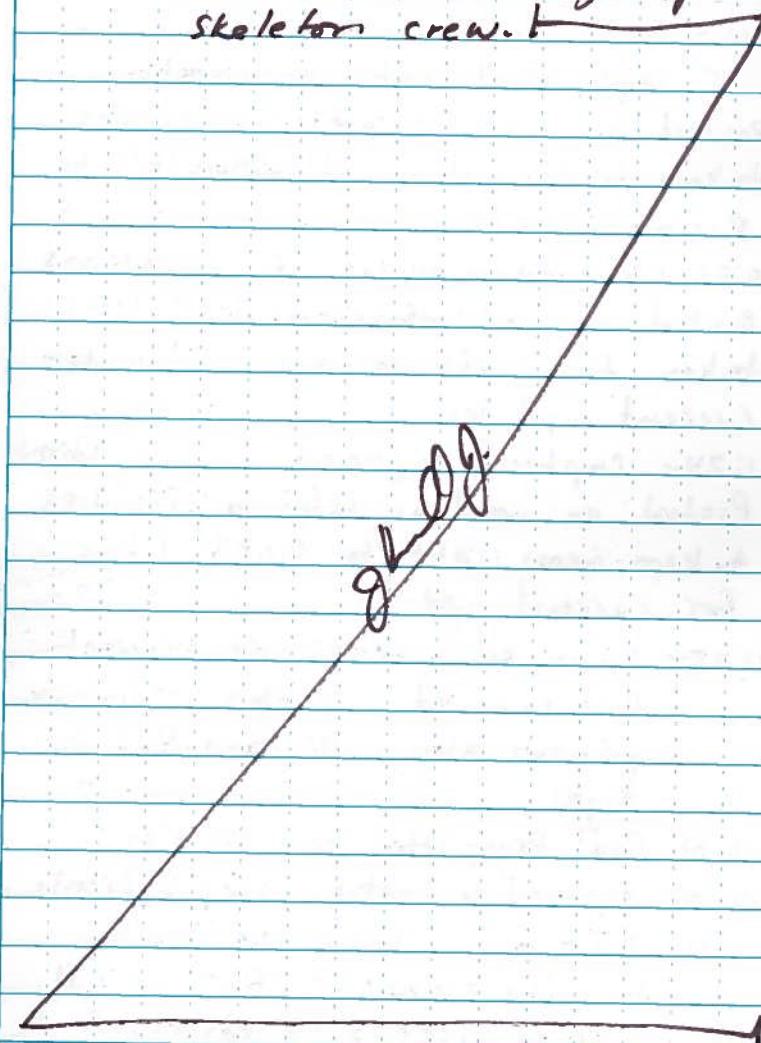
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Rite in the Rain.

October 31, 2016 Colonial GEOIE KRULL

area for air monitoring purposes.

01:15 - continued with night operations skeleton crew. ↴



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November 1, 2016 Colonial Geoie Krull

08:06 SJK

07:06 - NIGHT OPERATIONS consisted of having 4 AREA RAES CHARGED in CASE OF DEPLOYMENT, 2 multi:RAEs and 5 Gilians.

Paul Prys completed SITREP SPOKE WITH COLONIAL ABOUT AIR MONITORING Sampling plan as well as water sampling plan.

07:38 - Captured More pictures of up to date operations. Pictures taken from left to right.

07:47 - 55° Sunny clear skies.

07:57 - Karen Buerki called James Pinckney to be Public Information Officer

08:00 - COMMAND MEETING. KRULL PRYS did not attend; OSC Buerki and OSC JARDINE, ATTENDS THE Brief.

09:15 - Phone conference call with Franklin, Karen Buerki Paul Prys, Geoie Krull, Rick Tardine James Webster, Tony Moore Jordan Garrard. James Pinckney (PIO)

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Rite in the Rain

11:13 - ABC CH37, CH13 WBTH,  
WBRC

11:43 - Multi RAE PLUS 095-518698

SITE WALK at leak site

33.204249, -87.006394

Captured pictures of Burn  
area, Roped off danger zone  
and oil leakage.

Oxy - 20.9

H<sub>2</sub>S - 0

VOC - 0.0

CO - 3

LEL - 0

Site was walked with escort  
[Kevin McKay - Liaison Support]  
Continued walk along plume, by  
the house that was evacuated, and  
observed two trailers and a larger  
valley where likely plume to  
the Pond. Terrain was pretty  
steep and grown, decided to  
wait on ranger ATV before

Scale: 1 square = \_\_\_\_\_

November 1, 2016

G. Krull

Observing the Pond area.

13:50 - Back at Command Post, uploading  
pictures and documenting Maps.

89° Sunny and clear skies.

17:13 - Greg Harper, OSC, GEOIE Kevin  
Tetra Tech Sheridan, Coast  
Guard mobilize to field  
with Kawasaki ATV to  
scout HAZARDOUS AREA.

18:38 SITE WALK, NO ATV, sundown  
NOTICED SAFETY VESTS were not  
being utilized. Greg Harper  
mentioned to Andrew Livingston  
that a safety concern would  
be to wear a reflective vest  
amongst work area. Could not  
see workers moving around  
on busy roadway.

Andrew also pointed out the  
construction zone would be  
Roped off meaning fire  
retardant suit zone as well.

19:46 - BACK TO command post END OF DAY

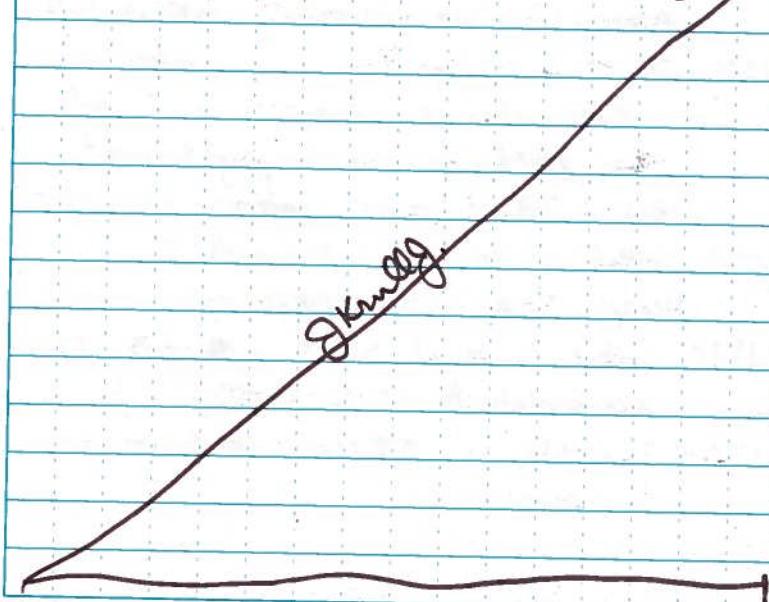
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Rite in the Rain

November 2, 2016 Colonial G. Krull  
 0700 - CARTER OWENS, PAUL PRYS, CHRIS JONES, START  
 0725 - KRULL, START, ON SITE.  
 - GREG HARPER, OSC, KAREN BVERY, OSC  
 0739 - 40° Partly Cloudy Pelham AL.  
 0940 - Spoke with Austin (Mapping) About  
 access to maps. He explained they  
 were updated a few times a day  
 and changed. CHRIS JONES will set  
 up to have access to the maps.  
 13:15 CARTER OWENS, GEOFF KRULL ARRIVED  
 AT  
 loaded ICE into coolers and discussed  
 sampling with EPS.  
 13:51 - DROVE ATV OUT TO SITE  
 Then grabbed sample jars to hike  
 out down river to area around the  
 bend.  
 14:00 - Sample time 14:10 SC-2, CP-SC-1  
 Location approximately 100-150 yards  
 upstream from bend [33.19906, 87.02050]  
 14:27 - Planned on Map route to mobilize  
 to SC-1, CP-SC-1 location  
 15:15 - Sample time 15:15 PD-1, CP-PD-1  
 location at the Pond.

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November 2, 2016 Colonial G. Krull  
 1540 - SAMPLE TIME 15:40 CR-BKG, CP-CR-BKG  
 followed drain way out to creek and  
 collected sample on upstream  
 side. Collected 15/MSD here for surface  
 water.  
 \* Note: All Tetra Tech samples were changed to  
 include date & matrix at the end of the  
 sample ID. For example CP-SC-2 is now  
 CP-SC-2-110216-SW for surface water  
 or CP-SC-2-110216-S1 for sediment  
 1921 TT Owners & Krull off-site End of Day ↗



Scale: 1 square = \_\_\_\_\_

Rite in the Rain.

November 3, 2016 Colonial G. Krull

0630 - Arrived on site G.Krull, C.Owens START

0915 - Moved to CR-1, CP-CR-1-110316, first sample collection zone. Joe Terry  
Melissa Spitzmiller, EPS.

1000 - ARRIVED ON SITE at CR-1, CP-CR-1-110316 Arena. Clear skies, sunny NO cell service to report temperature. Sample collection time is 10:00.

1037 - Arrived on site at CR-2, CP-CR-2-110316 Arena. Sample collection time is 10:40

1113 - Arrived on site at CR-3, CP-CR-3-110316 Arena. Sample collection time is 11:15

1300 On-site at staging area. Prep to collect surface water and sediment samples. Property owner for hunting club is going to escort EPS & TT to sample location.

1415 Collect samples at SC-Bkg with EPS. TT Sample labeled CP-SC-Bkg-110316

1530 Collect samples at SC-3 with EPS. TT Sample labeled CP-SC-3-110316

1720 - TT KRULL and TT OWENS OFF site to ship samples.

Scale: 1 square = \_\_\_\_\_

Friday, NOVEMBER 4, 2016 Colonial Pipeline DEER

0700 - Arrive @ Incident Command Center

0800 Debrief on response + receive instructions from C. Owens + P. Pyrs

0930 Arrive on site at staging area for water sampling w/ EPS

1045 Collect PD-1 sample w/ EPS

1115 Collect CR-bkg sample w/ EPS

1410 Collect SC-2 sample w/ EPS

1510 Collect SC-1 SW Sample w/ EPS Surface water sample collection complete w/ EPS; Joe Terry + Marie Weber-Gocke

1610 Depart Staging area + Return to ICC for Sample labeling

1700 Arrive to command center to debrief and complete labels + COC

1800 Meet Brian Craft + relinquish samples

1900 Review Chain of Custody

2000 Depart from site

Scale: 1 square = \_\_\_\_\_

Rite in the Rain

Saturday, NOVEMBER 5, 2016 Colonial D. EDLER

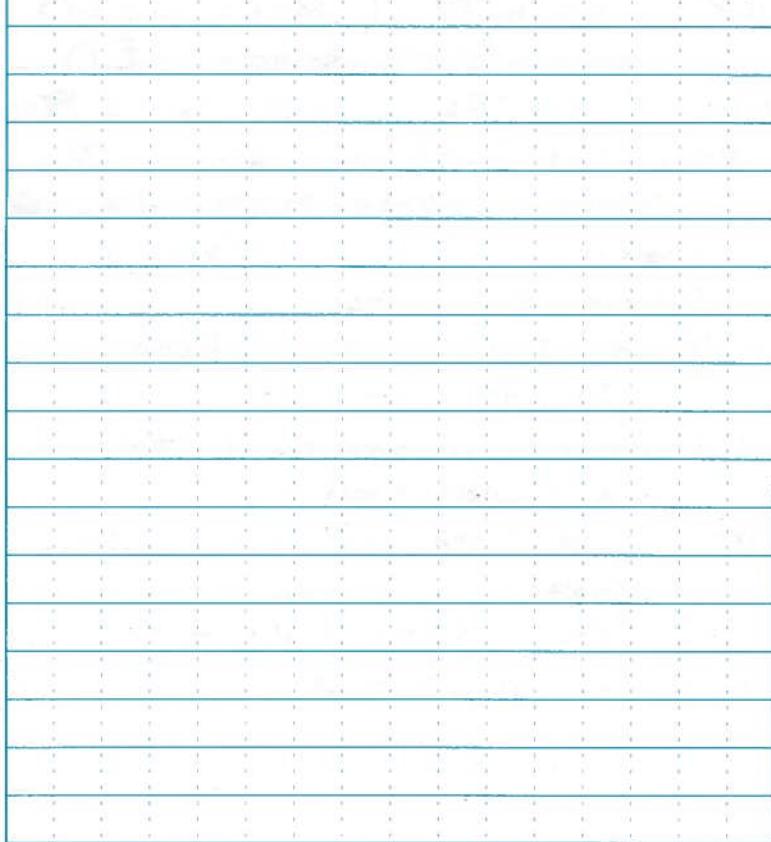
0730 Arrived at Incident Command Center

No surface water samples will

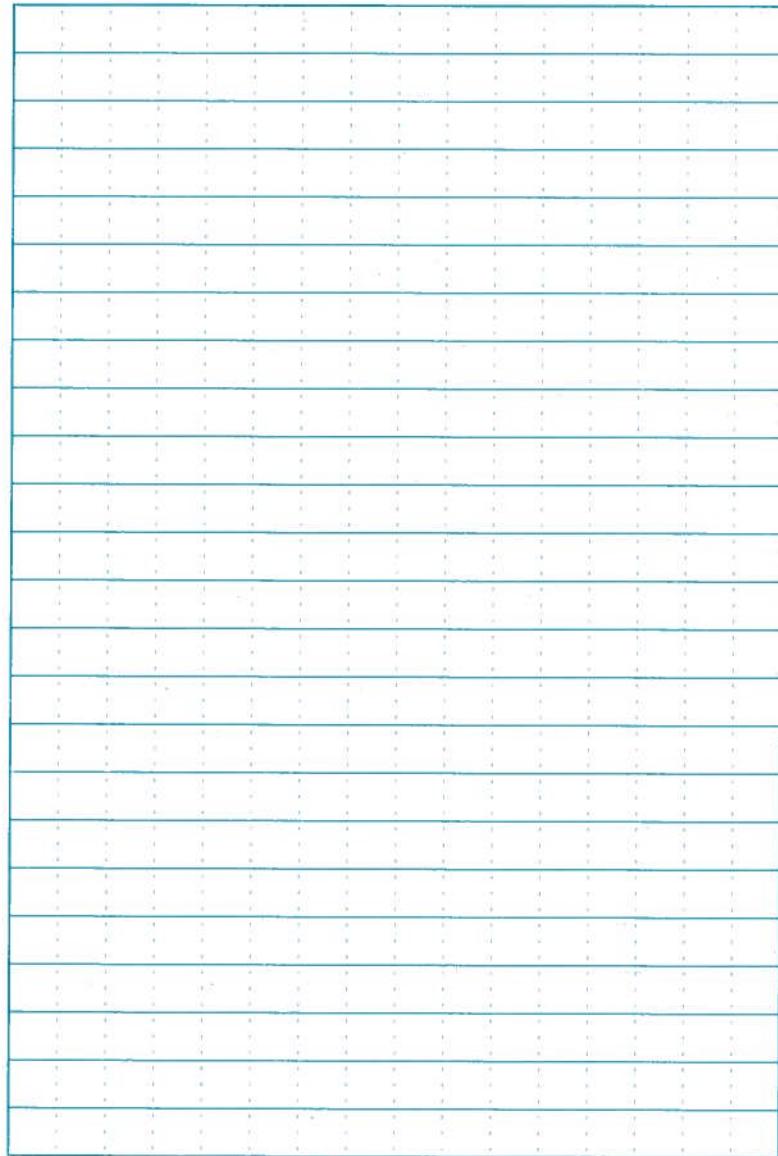
be collected today due to no  
new release of product from

pipeline

0800 EPT/ Incident Command meeting



Scale: 1 square = \_\_\_\_\_



Scale: 1 square = \_\_\_\_\_

Rite in the Rain.

11/3/16

James Pinkney  
Linda Daugherty  
ROGER EVANS  
RICK JARDINE  
Karen Buerki  
James Ureiko  
Artie Buff  
Marie Therese Dominguez  
Chris Taylor  
Daryus Kirkwood

EPA Public Affairs  
DOT / PHMSA  
NTSB  
EPA On-Scene Coordinator (OSC)  
EPA OSC  
DOT / PHMSA  
Dot / PHMSA  
DOT / PHMSA  
DOT / PHMSA



record pause stop

jump

bookmark

0% jump to position 100%

- - +

▲ ▼ 🔍

11/03/16

- No decon ops have been set up
- IC doesn't believe that decon is necessary except for heavy machinery
- River Road is no longer to be used
- Only main paved road will be used for entry to reduce dirt and dust dispersion, and to
- fire will be extinguished today
- before fire is extinguished non essential personnel will be evacuated
- Tors (Threaded O rings) will be placed at 4 strategic positions
- fire department and vacuum trucks are on standby waiting for the go ahead to proceed to extinguish the fire
- Tor # 7 will be installed tonight, which will allow fire personnel to proceed to extinguish the fire
- low levels of water and AFFF will be used to extinguish the fire
- Stoppers will be delivered, but there is no plan to use them at this time
- Tors will be used to ventilate and release pressure on the pipe. This will enable the product to drain into the valley with tor # 3 and 4
- Product will also settle between Tor # 6 and 7
- Fire was put out at 4:38 AM

(Three Sat/Sun)

24-hr op's

Day 1 incl 2 Feb (0)

night 1 start

501 366 8304

Monday ER 4-12 (8)

530-12 Colonial  
4-530 Chromcraft.

- Product still on fire / No product lost

- Body ~~RECOVERED~~ RECOVERED

- No PNL in waterways

- OSHA + NTSB not ~~OK~~ <sup>OK</sup> site for entry

- TDD \$25,000

- IRT meeting tomorrow @ 1100

- Southern Link + Horizon cows up.

- RIVER RD near fire and near NW Homes, PM<sub>2.5</sub> spikes to 0.138 mg/m<sup>3</sup>

- worker PM<sub>2.5</sub> 0.351 mg/m<sup>3</sup>

- comm. PM<sub>2.5</sub> 0.138 mg/m<sup>3</sup>

- Hwy 13 + upper parts RIVER RD good

5 homes (8 total res) 2 grac closer to ret. ~~home~~ homes /  
6 sheltered in place

- NTSB on site.

- Product still bubbling out of pipes & burning

- 24 hr op's tonight moving equipment and exc. pipes

- R4 regional director on site

-

~300 HOMES  
IMPACTED

600/angle 6

B 46 mg/L  
T

TK Scribe: Jessica

~~E~~

Planning - Chris Graff (or Belinda)

ETGN Field - James McCormack

John Wyott (columns)

Mario samples EDDs some format as before

CTGR Air-Rob

OPS Summary:

OPS section chief: Paul

11/3

- 2800 m<sup>3</sup> m<sup>3</sup>
- creating earthen berm around brook
  - excavated TOR downstream (staged)
  - excavated around Line 2 to look for damage.
  - updated Decon plan
  - working w/ NARA to get a weather station on-site.

Safety:

No issues. Dust suppression near burn area.

No exceedances over night, o/s burn area. PM2.5 exceedances were burn area, 1 PM2.5 EKC. at roadway near houses.

S+T Rep: No measurable rain for next few days.

Media inquiries

PHEMSA VIP on site, NTSB still on site.

Decon Plan approved (for all of the sites)

OPS EXC. on Line 1+

last night went on site 2

Line 2 resp. completed resuming normal ops.

Collected soil samples around line 2 exc.

Taged at site 2

Removed burned vehicles except EKC.

Moved decon areas

- OPS
- Build berm ~~around~~ around burn area.
  - Fire not out will put it out
  - Start drawing up toasty (completions noon tomorrow)
    - then begin excavation & isolate sites
    - remove + repair leak areas of pipe.
  - conducted final visual CP

control fire source

restoration & service

contain + recover spill material

max protect env, sensitive areas

No fly zones ends midnight tonight

- C21 to C23, SC1, scribble, SC-3

11/3/16

1600 mta

Safety: LBL at 127°, pulled back, mitigated problem, resumed  
exc. @ main drain ~~up to~~ prior, Installed toe.  
No issues otherwise.

PIO: Prof photo, on site and at incident area.  
PNMSA v.P visit. AL Forestry on site visit today.  
FBIQ comms (sew. UHF radios, USG)

~~290~~ 290 responders,

New proposed decom location.

Fire has not been put out.

Still conducting woodland clearing.

~~Drawn~~ Drawn up at midnight tonight. Water resources SCFGD, up, fire diminishing, vacuums up + downstream; therefore product remaining + burning out. Product to be removed during draw down. FIRE scheduled for extinguish at midnight. Burn completed around 1900.

Working on:

- Contain Source
- Control + Recover sp. 115D material
- Restoration of Service

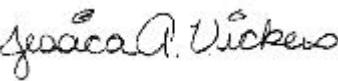
Robert Evans NTSB Lead Investigator. Still conducting investigation. From assessment to full blown investigation. NTSB takes over press releases concerning this incident. Remove, pressure, and ship the pipes.

**ENCLOSURE 4**  
**DATA VALIDATION REPORTS**  
(27 Pages)



## DATA VALIDATION CHECKLIST – STAGE 2A

(Page 1 of 4)

Site Name	Colonial Pipeline	Project No.	TT-03-015
Data Reviewer (signature and date)	 December 16, 2016	Laboratory/Report No.	TestAmerica Laboratories/J129595
Analyses	Benzene, toluene, ethylbenzene, and xylenes (BTEX) – SW-846 Method 8021B and gasoline range organics (GRO) – SW-846 Method 8015B		
Samples	CP-CR-1-110316-SW, CP-CR-2-110316, CP-CR-3-110316, CP-CR-Bkg-110216-SD, CP-CR-Bkg-110216-SW, CP-PD-1-110216-SD, CP-PD-1-110216-SW, CP-SC-2-110216-SD, CP-SC-2-110216-SW, CP-SC-3-110316-SD, CP-SC-3-110316-SW, CP-SC-Bkg-110316-SD, and CP-SC-Bkg-110316-SW		
Field Blanks	TRIP BLANK		

This checklist summarizes the Stage 2A validation performed on the subject laboratory report, in accordance with the U.S. Environmental Protection Agency (EPA) *Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use* (January 2009). Analytical data were evaluated in general accordance with the EPA *National Functional Guidelines (NFG) for Superfund Organic Methods Data Review* (September 2016) data validation guidance document, as well as the above referenced methods.

### OVERALL EVALUATION:

No rejection or qualification of data was required for this data package. The data can be used as reported by the laboratory.

#### Data completeness:

Within Criteria	Exceedance/Notes
Y	

#### Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
Y	



## DATA VALIDATION CHECKLIST – STAGE 2A

(Page 2 of 4)

### Method blanks:

Within Criteria	Exceedance/Notes
Y	

### Field blanks:

Within Criteria	Exceedance/Notes
Y	

### System monitoring compounds (surrogates and labeled compounds):

Within Criteria	Exceedance/Notes
Y	

### MS/MSD:

Within Criteria	Exceedance/Notes
Y	

### Laboratory duplicates:

Within Criteria	Exceedance/Notes
NA	



## DATA VALIDATION CHECKLIST – STAGE 2A

(Page 2 of 4)

### Method blanks:

Within Criteria	Exceedance/Notes
Y	

### Field blanks:

Within Criteria	Exceedance/Notes
Y	

### System monitoring compounds (surrogates and labeled compounds):

Within Criteria	Exceedance/Notes
Y	

### MS/MSD:

Within Criteria	Exceedance/Notes
Y	

### Laboratory duplicates:

Within Criteria	Exceedance/Notes
NA	



## DATA VALIDATION CHECKLIST – STAGE 2A

(Page 3 of 4)

**Field duplicates:**

<b>Within Criteria</b>	<b>Exceedance/Notes</b>
NA	

**LCSs/LCSDs:**

<b>Within Criteria</b>	<b>Exceedance/Notes</b>
Y	

**Sample dilutions:**

<b>Within Criteria</b>	<b>Exceedance/Notes</b>
NA	

**Re-extraction and reanalysis:**

<b>Within Criteria</b>	<b>Exceedance/Notes</b>
NA	

**MDLs/RRLs:**

<b>Within Criteria</b>	<b>Exceedance/Notes</b>
Y	Results between the MDL and RL – flagged "J" by the laboratory

## DATA VALIDATION CHECKLIST – STAGE 2A

(Page 4 of 4)

### Overall Qualifications:

See results summary pages attached for changes to the laboratory qualifiers based upon this validation. The following is a list of qualifiers and definitions that may be used for the validation of this data package:

J	The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample.
J+	The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample and may be biased high.
J-	The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample and may be biased low.
NJ	The analysis indicates the presence of an analyte that has been “tentatively identified” and the associated value is the approximate concentration of the analyte in the sample.
R	The sample result is rejected as unusable due to serious deficiencies in one or more quality control criteria. The analyte may or may not be present in the sample.
U	The analyte was analyzed for, but was not detected at or above the associated value (reporting limit).
UJ	The analyte was analyzed for, but was not detected at or above the associated value (reporting limit), which is considered approximate due to deficiencies in one or more quality control criteria.

# Client Sample Results

Client: Tetra Tech EM Inc.

Project/Site: Colonial Pipeline Gasoline Spill

TestAmerica Job ID: 400-129595-1

**Client Sample ID: CP-CR-1-110316-SW**

**Lab Sample ID: 400-129595-7**

Date Collected: 11/03/16 10:00

Matrix: Water

Date Received: 11/04/16 08:53

## Method: 8015B - Gasoline Range Organics - (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO) C6-C10	0.10	U	0.10	0.047	mg/L	-		11/04/16 13:34	1
<b>Surrogate</b>	<b>%Recovery</b>	<b>Qualifier</b>					<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
a,a,a-Trifluorotoluene (fid)	91			78 - 119				11/04/16 13:34	1

## Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.0010	U	0.0010	0.00045	mg/L	-		11/04/16 13:34	1
Ethylbenzene	0.0010	U	0.0010	0.00064	mg/L			11/04/16 13:34	1
Toluene	0.0050	U	0.0050	0.00098	mg/L			11/04/16 13:34	1
Xylenes, Total	0.0050	U	0.0050	0.0017	mg/L			11/04/16 13:34	1
<b>Surrogate</b>	<b>%Recovery</b>	<b>Qualifier</b>		<b>Limits</b>			<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
a,a,a-Trifluorotoluene (pid)	93			78 - 124				11/04/16 13:34	1

*gaw*  
12/16/16

TestAmerica Pensacola

# Client Sample Results

Client: Tetra Tech EM Inc.

Project/Site: Colonial Pipeline Gasoline Spill

TestAmerica Job ID: 400-129595-1

**Client Sample ID: CP-CR-2-110316-SW**

**Lab Sample ID: 400-129595-8**

Date Collected: 11/03/16 10:40

Matrix: Water

Date Received: 11/04/16 08:53

**Method: 8015B - Gasoline Range Organics - (GC)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO) C6-C10	0.10	U	0.10	0.047	mg/L	-		11/04/16 14:08	1
<hr/>									
<b>Surrogate</b>	<b>%Recovery</b>	<b>Qualifier</b>		<b>Limits</b>			<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
a,a,a-Trifluorotoluene (fid)	91			78 - 119				11/04/16 14:08	1

**Method: 8021B - Volatile Organic Compounds (GC)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.0010	U	0.0010	0.00045	mg/L	-		11/04/16 14:08	1
Ethylbenzene	0.0010	U	0.0010	0.00064	mg/L	-		11/04/16 14:08	1
Toluene	0.0050	U	0.0050	0.00098	mg/L	-		11/04/16 14:08	1
Xylenes, Total	0.0050	U	0.0050	0.0017	mg/L	-		11/04/16 14:08	1
<b>Surrogate</b>	<b>%Recovery</b>	<b>Qualifier</b>		<b>Limits</b>			<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
a,a,a-Trifluorotoluene (pid)	93			78 - 124				11/04/16 14:08	1

*[Handwritten signature]*  
12/16/16

TestAmerica Pensacola

# Client Sample Results

Client: Tetra Tech EM Inc.

Project/Site: Colonial Pipeline Gasoline Spill

TestAmerica Job ID: 400-129595-1

**Client Sample ID: CP-CR-3-110316-SW**

**Lab Sample ID: 400-129595-9**

Date Collected: 11/03/16 11:15

Matrix: Water

Date Received: 11/04/16 08:53

## Method: 8015B - Gasoline Range Organics - (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO) C6-C10	0.10	U	0.10	0.047	mg/L	-	-	11/04/16 14:43	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene (fid)	91		78 - 119				-	11/04/16 14:43	1

## Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.0010	U	0.0010	0.00045	mg/L	-	-	11/04/16 14:43	1
Ethylbenzene	0.0010	U	0.0010	0.00064	mg/L	-	-	11/04/16 14:43	1
Toluene	0.0050	U	0.0050	0.00098	mg/L	-	-	11/04/16 14:43	1
Xylenes, Total	0.0050	U	0.0050	0.0017	mg/L	-	-	11/04/16 14:43	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene (pid)	94		78 - 124				-	11/04/16 14:43	1

*gaw*  
12/16/16

TestAmerica Pensacola

# Client Sample Results

Client: Tetra Tech EM Inc.

Project/Site: Colonial Pipeline Gasoline Spill

TestAmerica Job ID: 400-129595-1

**Client Sample ID: CP-CR-Bkg-110216-SD**

**Lab Sample ID: 400-129595-6**

Date Collected: 11/02/16 15:40

Matrix: Solid

Date Received: 11/04/16 08:53

**Method: 8015B - Gasoline Range Organics - (GC)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO) C6-C10	0.11	U	0.11	0.053	mg/Kg	D	11/04/16 10:20	11/04/16 12:10	1
<b>Surrogate</b>	<b>%Recovery</b>	<b>Qualifier</b>			<b>Limits</b>				
a,a,a-Trifluorotoluene (fid)	104				65 - 125				

**Method: 8021B - Volatile Organic Compounds (GC)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.0011	U	0.0011	0.00072	mg/Kg	D	11/04/16 10:20	11/04/16 12:10	1
Ethylbenzene	0.0011	U	0.0011	0.00069	mg/Kg				
Toluene	0.0053	U	0.0053	0.0012	mg/Kg				
Xylenes, Total	0.0053	U	0.0053	0.0021	mg/Kg				
<b>Surrogate</b>	<b>%Recovery</b>	<b>Qualifier</b>			<b>Limits</b>				
a,a,a-Trifluorotoluene (pid)	101				40 - 150				

*Jaw  
12/16/16*

TestAmerica Pensacola

# Client Sample Results

Client: Tetra Tech EM Inc.

Project/Site: Colonial Pipeline Gasoline Spill

TestAmerica Job ID: 400-129595-1

**Client Sample ID: CP-CR-Bkg-110216-SW**

**Lab Sample ID: 400-129595-3**

Date Collected: 11/02/16 15:40

Matrix: Water

Date Received: 11/04/16 08:53

**Method: 8015B - Gasoline Range Organics - (GC)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO) C6-C10	0.10	U	0.10	0.047	mg/L	-		11/04/16 12:59	1
<b>Surrogate</b>	<b>%Recovery</b>	<b>Qualifier</b>		<b>Limits</b>			<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
a,a,a-Trifluorotoluene (fid)	91			78 - 119				11/04/16 12:59	1

**Method: 8021B - Volatile Organic Compounds (GC)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.0010	U	0.0010	0.00045	mg/L	-		11/04/16 12:59	1
Ethylbenzene	0.0010	U	0.0010	0.00064	mg/L	-		11/04/16 12:59	1
Toluene	0.0050	U	0.0050	0.00098	mg/L	-		11/04/16 12:59	1
Xylenes, Total	0.0050	U	0.0050	0.0017	mg/L	-		11/04/16 12:59	1
<b>Surrogate</b>	<b>%Recovery</b>	<b>Qualifier</b>		<b>Limits</b>			<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
a,a,a-Trifluorotoluene (pid)	94			78 - 124				11/04/16 12:59	1

*Jaw*  
12/16/16

TestAmerica Pensacola

# Client Sample Results

Client: Tetra Tech EM Inc.

Project/Site: Colonial Pipeline Gasoline Spill

TestAmerica Job ID: 400-129595-1

**Client Sample ID: CP-PD-1-110216-SD**

**Lab Sample ID: 400-129595-5**

Date Collected: 11/02/16 15:15

Matrix: Solid

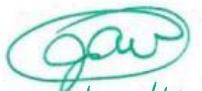
Date Received: 11/04/16 08:53

**Method: 8015B - Gasoline Range Organics - (GC)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO) C6-C10	0.17	U	0.17	0.084	mg/Kg	D	11/04/16 10:20	11/04/16 11:43	1
<hr/>									
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene (fid)	101		65 - 125				11/04/16 10:20	11/04/16 11:43	1

**Method: 8021B - Volatile Organic Compounds (GC)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.0017	U	0.0017	0.0011	mg/Kg	D	11/04/16 10:20	11/04/16 11:43	1
Ethylbenzene	0.0017	U	0.0017	0.0011	mg/Kg		11/04/16 10:20	11/04/16 11:43	1
Toluene	0.0082	J	0.0084	0.0018	mg/Kg		11/04/16 10:20	11/04/16 11:43	1
Xylenes, Total	0.0084	U	0.0084	0.0034	mg/Kg		11/04/16 10:20	11/04/16 11:43	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene (pid)	99		40 - 150				11/04/16 10:20	11/04/16 11:43	1


  
12/14/16

TestAmerica Pensacola

# Client Sample Results

Client: Tetra Tech EM Inc.

Project/Site: Colonial Pipeline Gasoline Spill

TestAmerica Job ID: 400-129595-1

**Client Sample ID: CP-PD-1-110216-SW**

**Lab Sample ID: 400-129595-2**

Date Collected: 11/02/16 15:15

Matrix: Water

Date Received: 11/04/16 08:53

**Method: 8015B - Gasoline Range Organics - (GC)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO) C6-C10	0.10	U	0.10	0.047	mg/L	-		11/04/16 12:24	1
<b>Surrogate</b>	<b>%Recovery</b>	<b>Qualifier</b>		<b>Limits</b>			<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
a,a,a-Trifluorotoluene (fid)	89			78 - 119				11/04/16 12:24	1

**Method: 8021B - Volatile Organic Compounds (GC)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.0010	U	0.0010	0.00045	mg/L	-		11/04/16 12:24	1
Ethylbenzene	0.0010	U	0.0010	0.00064	mg/L	-		11/04/16 12:24	1
Toluene	0.0050	U	0.0050	0.00098	mg/L	-		11/04/16 12:24	1
Xylenes, Total	0.0050	U	0.0050	0.0017	mg/L	-		11/04/16 12:24	1
<b>Surrogate</b>	<b>%Recovery</b>	<b>Qualifier</b>		<b>Limits</b>			<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
a,a,a-Trifluorotoluene (pid)	92			78 - 124				11/04/16 12:24	1

*gaw*  
12/16/16

TestAmerica Pensacola

# Client Sample Results

Client: Tetra Tech EM Inc.

Project/Site: Colonial Pipeline Gasoline Spill

TestAmerica Job ID: 400-129595-1

**Client Sample ID: CP-SC-2-110216-SD**

**Lab Sample ID: 400-129595-4**

Date Collected: 11/02/16 14:10

Matrix: Solid

Date Received: 11/04/16 08:53

**Method: 8015B - Gasoline Range Organics - (GC)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO) C6-C10	0.11	U	0.11	0.054	mg/Kg		11/04/16 10:20	11/04/16 11:16	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene (fid)	103		65 - 125	11/04/16 10:20	11/04/16 11:16	1

**Method: 8021B - Volatile Organic Compounds (GC)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.0011	U	0.0011	0.00074	mg/Kg		11/04/16 10:20	11/04/16 11:16	1
Ethylbenzene	0.0011	U	0.0011	0.00071	mg/Kg		11/04/16 10:20	11/04/16 11:16	1
Toluene	0.0054	U	0.0054	0.0012	mg/Kg		11/04/16 10:20	11/04/16 11:16	1
Xylenes, Total	0.0054	U	0.0054	0.0022	mg/Kg		11/04/16 10:20	11/04/16 11:16	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene (pid)	102		40 - 150	11/04/16 10:20	11/04/16 11:16	1

*jaw*  
12/14/16

TestAmerica Pensacola

# Client Sample Results

Client: Tetra Tech EM Inc.

Project/Site: Colonial Pipeline Gasoline Spill

TestAmerica Job ID: 400-129595-1

**Client Sample ID: CP-SC-2-110216-SW**

**Lab Sample ID: 400-129595-1**

Date Collected: 11/02/16 14:10

Matrix: Water

Date Received: 11/04/16 08:53

## Method: 8015B - Gasoline Range Organics - (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO) C6-C10	0.10	U	0.10	0.047	mg/L	-		11/04/16 11:50	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene (fid)	89		78 - 119					11/04/16 11:50	1

## Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.0010	U	0.0010	0.00045	mg/L	-		11/04/16 11:50	1
Ethylbenzene	0.0010	U	0.0010	0.00064	mg/L	-		11/04/16 11:50	1
Toluene	0.0050	U	0.0050	0.00098	mg/L	-		11/04/16 11:50	1
Xylenes, Total	0.0050	U	0.0050	0.0017	mg/L	-		11/04/16 11:50	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene (pid)	92		78 - 124					11/04/16 11:50	1

*Jaw*  
12/16/16

TestAmerica Pensacola

# Client Sample Results

Client: Tetra Tech EM Inc.

Project/Site: Colonial Pipeline Gasoline Spill

TestAmerica Job ID: 400-129595-1

**Client Sample ID: CP-SC-3-110316-SD**

**Lab Sample ID: 400-129595-12**

Date Collected: 11/03/16 15:30

Matrix: Solid

Date Received: 11/04/16 08:53

**Method: 8015B - Gasoline Range Organics - (GC)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO) C6-C10	0.11	U	0.11	0.056	mg/Kg	D	11/04/16 10:20	11/04/16 13:05	1

**Surrogate**

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene (fid)	104		65 - 125	11/04/16 10:20	11/04/16 13:05	1

**Method: 8021B - Volatile Organic Compounds (GC)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.0011	U	0.0011	0.00076	mg/Kg	D	11/04/16 10:20	11/04/16 13:05	1
Ethylbenzene	0.0011	U	0.0011	0.00073	mg/Kg		11/04/16 10:20	11/04/16 13:05	1
Toluene	0.0056	U	0.0056	0.0012	mg/Kg		11/04/16 10:20	11/04/16 13:05	1
Xylenes, Total	0.0056	U	0.0056	0.0022	mg/Kg		11/04/16 10:20	11/04/16 13:05	1

**Surrogate**

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene (pid)	98		40 - 150	11/04/16 10:20	11/04/16 13:05	1

*gaw*  
12/16/16

TestAmerica Pensacola

# Client Sample Results

Client: Tetra Tech EM Inc.

Project/Site: Colonial Pipeline Gasoline Spill

TestAmerica Job ID: 400-129595-1

**Client Sample ID: CP-SC-3-110316-SW**

**Lab Sample ID: 400-129595-13**

Date Collected: 11/03/16 15:30

Matrix: Water

Date Received: 11/04/16 08:53

**Method: 8015B - Gasoline Range Organics - (GC)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO) C6-C10	0.10	U	0.10	0.047	mg/L	-		11/04/16 17:36	1
<b>Surrogate</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
a,a,a-Trifluorotoluene (fid)	91		78 - 119					11/04/16 17:36	1

**Method: 8021B - Volatile Organic Compounds (GC)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.0010	U	0.0010	0.00045	mg/L	-		11/04/16 17:36	1
Ethylbenzene	0.0010	U	0.0010	0.00064	mg/L	-		11/04/16 17:36	1
Toluene	0.0050	U	0.0050	0.00098	mg/L	-		11/04/16 17:36	1
Xylenes, Total	0.0050	U	0.0050	0.0017	mg/L	-		11/04/16 17:36	1
<b>Surrogate</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
a,a,a-Trifluorotoluene (pid)	93		78 - 124					11/04/16 17:36	1

*gpw*  
12/14/16

TestAmerica Pensacola

# Client Sample Results

Client: Tetra Tech EM Inc.

Project/Site: Colonial Pipeline Gasoline Spill

TestAmerica Job ID: 400-129595-1

**Client Sample ID: CP-SC-Bkg-110316-SD**

**Lab Sample ID: 400-129595-10**

Date Collected: 11/03/16 14:15

Matrix: Solid

Date Received: 11/04/16 08:53

**Method: 8015B - Gasoline Range Organics - (GC)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO) C6-C10	0.094	U	0.094	0.047	mg/Kg		11/04/16 10:20	11/04/16 12:38	1
<b>Surrogate</b>									
a,a,a-Trifluorotoluene (fid)	102		65 - 125				11/04/16 10:20	11/04/16 12:38	1

**Method: 8021B - Volatile Organic Compounds (GC)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.00094	U	0.00094	0.00064	mg/Kg		11/04/16 10:20	11/04/16 12:38	1
Ethylbenzene	0.00094	U	0.00094	0.00061	mg/Kg		11/04/16 10:20	11/04/16 12:38	1
Toluene	0.0047	U	0.0047	0.0010	mg/Kg		11/04/16 10:20	11/04/16 12:38	1
Xylenes, Total	0.0047	U	0.0047	0.0019	mg/Kg		11/04/16 10:20	11/04/16 12:38	1
<b>Surrogate</b>									
a,a,a-Trifluorotoluene (pid)	100		40 - 150				11/04/16 10:20	11/04/16 12:38	1

*jaw*  
12/14/16

TestAmerica Pensacola

# Client Sample Results

Client: Tetra Tech EM Inc.

Project/Site: Colonial Pipeline Gasoline Spill

TestAmerica Job ID: 400-129595-1

**Client Sample ID: CP-SC-Bkg-110316-SW**

**Lab Sample ID: 400-129595-11**

Date Collected: 11/03/16 14:15

Matrix: Water

Date Received: 11/04/16 08:53

## Method: 8015B - Gasoline Range Organics - (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO) C6-C10	0.10	U	0.10	0.047	mg/L	-		11/04/16 17:01	1
<b>Surrogate</b>	<b>%Recovery</b>	<b>Qualifier</b>		<b>Limits</b>			<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
a,a,a-Trifluorotoluene (fid)	91			78 - 119				11/04/16 17:01	1

## Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.0010	U	0.0010	0.00045	mg/L	-		11/04/16 17:01	1
Ethylbenzene	0.0010	U	0.0010	0.00064	mg/L	-		11/04/16 17:01	1
Toluene	0.0050	U	0.0050	0.00098	mg/L	-		11/04/16 17:01	1
Xylenes, Total	0.0050	U	0.0050	0.0017	mg/L	-		11/04/16 17:01	1
<b>Surrogate</b>	<b>%Recovery</b>	<b>Qualifier</b>		<b>Limits</b>			<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
a,a,a-Trifluorotoluene (pid)	94			78 - 124				11/04/16 17:01	1

*gaw*  
12/16/16

TestAmerica Pensacola

# Client Sample Results

Client: Tetra Tech EM Inc.

Project/Site: Colonial Pipeline Gasoline Spill

TestAmerica Job ID: 400-129595-1

**Client Sample ID: TRIP BLANK**

Date Collected: 11/03/16 00:00

Date Received: 11/04/16 08:53

**Lab Sample ID: 400-129595-14**

Matrix: Water

## Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.0010	U	0.0010	0.00045	mg/L			11/04/16 11:16	1
Ethylbenzene	0.0010	U	0.0010	0.00064	mg/L			11/04/16 11:16	1
Toluene	0.0050	U	0.0050	0.00098	mg/L			11/04/16 11:16	1
Xylenes, Total	0.0050	U	0.0050	0.0017	mg/L			11/04/16 11:16	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene (pid)	92		78 - 124					11/04/16 11:16	1

gaw  
12/16/16

TestAmerica Pensacola



## DATA VALIDATION CHECKLIST – STAGE 2A

(Page 1 of 4)

<b>Site Name</b>	Colonial Pipeline	<b>Project No.</b>	TT-03-015
<b>Data Reviewer (signature and date)</b>	<i>Jessica A. Vickers</i> January 9, 2017	<b>Laboratory/Report No.</b>	TestAmerica Laboratories/J129722
<b>Analyses</b>	Benzene, toluene, ethylbenzene, and xylenes (BTEX) – SW-846 Method 8021B and gasoline range organics (GRO) – SW-846 Method 8015B		
<b>Samples</b>	CP-CR-Bkg-110416-SW, CP-PD-1-110416-SW, CP-SC-1-110416-SW, and CP-SC-2-110416-SW		

This checklist summarizes the Stage 2A validation performed on the subject laboratory report, in accordance with the U.S. Environmental Protection Agency (EPA) *Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use* (January 2009). Analytical data were evaluated in general accordance with the EPA *National Functional Guidelines (NFG) for Superfund Organic Methods Data Review* (September 2016) data validation guidance document, as well as the above referenced methods.

### OVERALL EVALUATION:

No rejection or qualification of data was required for this data package. The data can be used as reported by the laboratory.

#### Data completeness:

Within Criteria	Exceedance/Notes
Y	

#### Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
Y	



## DATA VALIDATION CHECKLIST – STAGE 2A

(Page 2 of 4)

### Method blanks:

Within Criteria	Exceedance/Notes
Y	

### Field blanks:

Within Criteria	Exceedance/Notes
NA	

### System monitoring compounds (surrogates and labeled compounds):

Within Criteria	Exceedance/Notes
Y	

### MS/MSD:

Within Criteria	Exceedance/Notes
Y	

### Laboratory duplicates:

Within Criteria	Exceedance/Notes
NA	



## DATA VALIDATION CHECKLIST – STAGE 2A

(Page 3 of 4)

### Field duplicates:

Within Criteria	Exceedance/Notes
NA	

### LCSs/LCSDs:

Within Criteria	Exceedance/Notes
Y	

### Sample dilutions:

Within Criteria	Exceedance/Notes
NA	

### Re-extraction and reanalysis:

Within Criteria	Exceedance/Notes
NA	

### MDLs/RRLs:

Within Criteria	Exceedance/Notes
Y	

## DATA VALIDATION CHECKLIST – STAGE 2A

(Page 4 of 4)

### Overall Qualifications:

See results summary pages attached for changes to the laboratory qualifiers based upon this validation. The following is a list of qualifiers and definitions that may be used for the validation of this data package:

J	The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample.
J+	The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample and may be biased high.
J-	The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample and may be biased low.
NJ	The analysis indicates the presence of an analyte that has been “tentatively identified” and the associated value is the approximate concentration of the analyte in the sample.
R	The sample result is rejected as unusable due to serious deficiencies in one or more quality control criteria. The analyte may or may not be present in the sample.
U	The analyte was analyzed for, but was not detected at or above the associated value (reporting limit).
UJ	The analyte was analyzed for, but was not detected at or above the associated value (reporting limit), which is considered approximate due to deficiencies in one or more quality control criteria.

# Client Sample Results

Client: Tetra Tech EM Inc.

Project/Site: Colonial Pipeline Gasoline Spill

TestAmerica Job ID: 400-129722-1

**Client Sample ID: CP-CR-Bkg-110416-SW**

**Lab Sample ID: 400-129722-2**

Date Collected: 11/04/16 11:15

Matrix: Water

Date Received: 11/08/16 09:08

## Method: 8015B - Gasoline Range Organics - (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO) C6-C10	0.10	U	0.10	0.047	mg/L			11/08/16 12:54	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene (fid)	105		78 - 119					11/08/16 12:54	1

## Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.0010	U	0.0010	0.00045	mg/L			11/08/16 12:54	1
Ethylbenzene	0.0010	U	0.0010	0.00064	mg/L			11/08/16 12:54	1
Toluene	0.0050	U	0.0050	0.00098	mg/L			11/08/16 12:54	1
Xylenes, Total	0.0050	U	0.0050	0.0017	mg/L			11/08/16 12:54	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene (pid)	100		78 - 124					11/08/16 12:54	1

*gaw*  
01/09/17

TestAmerica Pensacola

# Client Sample Results

Client: Tetra Tech EM Inc.

Project/Site: Colonial Pipeline Gasoline Spill

TestAmerica Job ID: 400-129722-1

**Client Sample ID: CP-PD-1-110416-SW**

**Lab Sample ID: 400-129722-1**

Date Collected: 11/04/16 10:45

Matrix: Water

Date Received: 11/08/16 09:08

## Method: 8015B - Gasoline Range Organics - (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO) C6-C10	0.10	U	0.10	0.047	mg/L			11/08/16 12:26	1
Surrogate <i>a,a,a-Trifluorotoluene (fid)</i>	103			78 - 119			Prepared	Analyzed	Dil Fac

## Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.0010	U	0.0010	0.00045	mg/L			11/08/16 12:26	1
Ethylbenzene	0.0010	U	0.0010	0.00064	mg/L			11/08/16 12:26	1
Toluene	0.0050	U	0.0050	0.00098	mg/L			11/08/16 12:26	1
Xylenes, Total	0.0050	U	0.0050	0.0017	mg/L			11/08/16 12:26	1
Surrogate <i>a,a,a-Trifluorotoluene (pid)</i>	102			78 - 124			Prepared	Analyzed	Dil Fac

*jaw*  
01/09/17

TestAmerica Pensacola

# Client Sample Results

Client: Tetra Tech EM Inc.

Project/Site: Colonial Pipeline Gasoline Spill

TestAmerica Job ID: 400-129722-1

**Client Sample ID: CP-SC-1-110416-SW**

**Lab Sample ID: 400-129722-4**

Date Collected: 11/04/16 15:10

Matrix: Water

Date Received: 11/08/16 09:08

## Method: 8015B - Gasoline Range Organics - (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO) C6-C10	0.10	U	0.10	0.047	mg/L	-		11/08/16 13:49	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene (fid)	104		78 - 119					11/08/16 13:49	1

## Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.0010	U	0.0010	0.00045	mg/L	-		11/08/16 13:49	1
Ethylbenzene	0.0010	U	0.0010	0.00064	mg/L	-		11/08/16 13:49	1
Toluene	0.0050	U	0.0050	0.00098	mg/L	-		11/08/16 13:49	1
Xylenes, Total	0.0050	U	0.0050	0.0017	mg/L	-		11/08/16 13:49	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene (pid)	99		78 - 124					11/08/16 13:49	1

*gaw*  
01/09/17

TestAmerica Pensacola

# Client Sample Results

Client: Tetra Tech EM Inc.

Project/Site: Colonial Pipeline Gasoline Spill

TestAmerica Job ID: 400-129722-1

**Client Sample ID: CP-SC-2-110416-SW**

**Lab Sample ID: 400-129722-3**

Date Collected: 11/04/16 14:10

Matrix: Water

Date Received: 11/08/16 09:08

## Method: 8015B - Gasoline Range Organics - (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO) C6-C10	0.10	U	0.10	0.047	mg/L	-		11/08/16 13:21	1
<b>Surrogate</b>	<b>%Recovery</b>	<b>Qualifier</b>			<b>Limits</b>		<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
a,a,a-Trifluorotoluene (fid)	102				78 - 119			11/08/16 13:21	1

## Method: 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.0010	U	0.0010	0.00045	mg/L	-		11/08/16 13:21	1
Ethylbenzene	0.0010	U	0.0010	0.00064	mg/L			11/08/16 13:21	1
Toluene	0.0050	U	0.0050	0.00098	mg/L			11/08/16 13:21	1
Xylenes, Total	0.0050	U	0.0050	0.0017	mg/L			11/08/16 13:21	1
<b>Surrogate</b>	<b>%Recovery</b>	<b>Qualifier</b>			<b>Limits</b>		<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
a,a,a-Trifluorotoluene (pid)	100				78 - 124			11/08/16 13:21	1

*gaw*  
01/09/17

TestAmerica Pensacola

**ENCLOSURE 5**  
**SCRIBE DATABASE**  
(On Compact Disc)

**ATTACHMENT 1**  
**EMAIL CORRESPONDENCE OF COMPARISON CRITERIA**  
(20 Pages)

## **Prys, Paul**

---

**From:** Jones, Chris  
**Sent:** Tuesday, November 01, 2016 5:12 PM  
**To:** 'Greg Harper (harper.greg@epa.gov)'; buerki.karen@epa.gov  
**Cc:** Prys, Paul  
**Subject:** ADEM Comparison Criteria  
**Attachments:** Table 2 Ecological Sediment Screening Table 9\_16\_16.xlsx; Tables 1 - Ecological Surface Water Screening Tables 9\_19\_16.xlsx

See below for ecological comparison criteria generated by ADEM. These values were used during the previous pipeline response. I've also attached some ecological comparison criteria put together by EPA (provided in the attached table).

**COPIED FOR EMAIL PROVIDED BY ADEM**

Paul and Josh,

Below are the water quality criteria for benzene, ethylbenzene, and toluene:

Consumption of Water and Fish (mg/L)

Consumption of Fish only (mg/L)

Benzene

0.00112

0.01547

Ethylbenzene

0.44800

1.24444

Toluene

1.20638

8.72274

Kimberly Minton, Chief  
Technical Support Section  
Water Quality Branch  
Water Division

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**Table 1a**  
**Region 4 Surface Water Screening Values for Hazardous Waste Sites**

Chemical	CAS	Freshwater Screening Values (µg/L)			
		Chronic	Acute	Source	
<b>Inorganic Compounds</b>					
<b>Metals</b>					
Nickel (filtered) ^ *	7440-02-0	28.9	260	a	
Vanadium	7440-62-2	27	79	b	
<b>Volatile Organic Compounds (VOCs)</b>					
<b>Monoaromatic hydrocarbons</b>					
1,2,4-Trimethylbenzene	95-63-6	15	140	b	
1,3,5-Trimethylbenzene	108-67-8	26	230	b	
Benzene	71-43-2	160	700	b	
Cymene, p- (4-Isopropyltoluene)	99-87-6	16	150	b	
Ethylbenzene	100-41-4	61	550	b	
Isopropylbenzene (Cumene)	98-82-8	4.8	43	b	
Styrene (vinyl benzene)	100-42-5	32	290	b	
Toluene	108-88-3	62	560	b	
Xylenes (total)	1330-20-7	27	240	b	
Tetrahydrofuran	109-99-9	11,000	74,000	b	
<b>Semivolatile Organic Compounds</b>					
<b>Aliphatic Hydrocarbons</b>					
Pentane					
Cyclopentane					
Hexane					
Cyclohexane	110-82-7	230	1,190	e, i	
Heptane					
Octane					
Isooctane					
Nonane					
Decane	124-18-5	49	880	c	
<b>Polycyclic Aromatic Hydrocarbons (PAHs)</b>					
1-Methylnaphthalene	90-12-0	6.1	109	b	
2-Methylnaphthalene	91-57-6	4.7	42	b	
Acenaphthene	83-32-9	15	19	b	
Acenaphthylene	208-96-8	13	120	b	
Anthracene	120-12-7	0.02	0.18	b	
<b>Benz(a)anthracene</b>	56-55-3	4.7	42	b	
<b>Benzo(a)pyrene</b>	50-32-8	0.060	0.54	b	
<b>Benzo(b)fluoranthene</b>	205-99-2	2.6	23	b	
<b>Benzo(g,h,i)perylene</b>	191-24-2	0.44	0.91	q	
<b>Benzo(k)fluoranthene</b>	207-08-9	0.64	1.3	q	
<b>Chrysene</b>	218-01-9	4.7	42	b	
<b>Dibenz(a,h)anthracene</b>	53-70-3	0.28	0.59	q	
<b>Fluoranthene</b>	206-44-0	0.8	3.7	b	
Fluorene	86-73-7	19	110	b	
<b>Indeno(1,2,3-cd)pyrene</b>	193-39-5	0.28	0.6	q	
Naphthalene	91-20-3	21	170	b	
<b>Phenanthrene</b>	85-01-8	2.3	31	b	
Pyrene	129-00-0	4.6	42	b	
<b>Other SVOCs</b>					
1,1-Biphenyl	92-52-4	6.5	26	b	
Dibenzofuran	132-64-9	4	36	b	
<b>Bulk Petroleum Hydrocarbons, µg/L</b>					
Gasoline Range Organics		114			
Total Petroleum Hydrocarbons - Diesel	68334-30-5				
Total Petroleum Hydrocarbons - Residual	68476-53-9				

**Table 1a**  
**Region 4 Surface Water Screening Values for Hazardous Waste Sites**

Chemical	CAS	Freshwater Screening Values ( $\mu\text{g/L}$ )		
		Chronic	Acute	Source

**Table 1a Notes:**

**Red font** indicates a bioaccumulative chemical.

<sup>a</sup> - Screening value is for **filtered (dissolved)** metals. A conversion factor (CF) was used to convert the screening value for total metals in surface water to a screening value for dissolved metals in surface water. CMC (dissolved) = CMC (total) ×

<sup>b</sup> - The freshwater screening value is hardness dependent. The screening value shown in Table 1a is for **dissolved metals assuming a hardness of 50 mg/L as CaCO<sub>3</sub>**. A correction for site-specific hardness was based on equations listed in

Tables 1b and 1c. If hardness data are unavailable hardness may be estimated as: H = 2.497 × Ca (mg/L) + 4.118 × Mg (mg/L)

<sup>#</sup> - Freshwater criteria for pentachlorophenol are pH Dependent. Values displayed are for a pH of 7.8.

<sup>AA</sup> - Criteria for ammonia are pH, temperature, and lifestage dependent.

<sup>\*\*</sup> - Selenium concentrations in water do not reflect dietary sources to aquatic life and screening against these numbers is

**Table 1a Sources:**

<sup>a</sup> - National Recommended Water Quality Criteria

<http://water.epa.gov/criteria/swguidance/standards/criteria/current/index.cfm>

<sup>b</sup> - Per the NRWQC, when comparing the maximum detected value, the higher number should be used; but if comparing to an average or 95%UCL, the lower number should be used.

<sup>aa</sup> - Tier 2 value.

<sup>b</sup> - Great Lakes Initiative (GLI) Clearinghouse resources tier II criteria revised 2013

<http://www2.epa.gov/glc clearinghouse/>

<sup>c</sup> - Suter, G.W. II, and Tsao, C.L. 1996. Toxicological benchmarks for screening potential contaminants of concern for effects on aquatic biota: 1996 Revision. ES/ER/TM-96/R2.

<http://www.esd.ornl.gov/programs/ecorisk/documents/tm96r2.pdf> <http://www.uep.state.fl.us/legal/rules/shareu/02-207/207-Table.pdf>

<sup>d</sup> - North Carolina Department of Natural Resources (NCDNR) Surface Water Standards

<http://dec.nc.gov/about/divisions/water-resources/planning/classification-standards/surface-water->

<sup>e</sup> - Georgia Department of Natural Resources (GADNR) Water Use Classifications and Water Quality Standards

<http://rules.sos.state.ga.us/docs/391/3/6/03.pdf>

<sup>g</sup> - Hawaii Department of Health (HDOH) Environmental Action Levels, Chronic and Acute Surface Water (Aquatic Habitat) Standards <http://eha-web.doh.hawaii.gov/eha-cma/Leaders/HEER/environmental-hazard-evaluation-and->

<sup>h</sup> - CCME (Canadian Council of Ministers of the Environment). 2003. Canadian Environmental Quality Guidelines: Summary Table December 2003. Canadian Council of Ministers of the Environment, Winnipeg, Manitoba. Available at: [http://www.ccme.ca/en/resources/canadian\\_environmental\\_quality\\_guidelines/index.html](http://www.ccme.ca/en/resources/canadian_environmental_quality_guidelines/index.html)

<sup>i</sup> - McGrath and Di Toro (2009) Model - See text Section 6.1.4 Equation 1.

<sup>j</sup> - ECOSAR program predicted lowest chronic or acute value. See Section 6.1.4 in text.

<sup>k</sup> - Talmadge et al. (1999)

<sup>l</sup> - New York Ambient Water Quality Criteria and Guidance Values: [http://www.dec.ny.gov/docs/water\\_pdf/togs111.pdf](http://www.dec.ny.gov/docs/water_pdf/togs111.pdf)

<sup>m</sup> - New Jersey Department of Environmental Protection (NJDEP) Ecological Screening Criteria

[http://www.nj.gov/dep/srp/guidance/ecoscreening/esc\\_table.pdf](http://www.nj.gov/dep/srp/guidance/ecoscreening/esc_table.pdf)

<sup>ii</sup> - Michigan Water Quality Values - Rule 57: [http://www.michigan.gov/ueq/u,4501,-135-3313\\_3080\\_3/28-11383--nn.html](http://www.michigan.gov/ueq/u,4501,-135-3313_3080_3/28-11383--nn.html)

<sup>o</sup> - Texas Surface Water Quality Standards: <https://www.tceq.texas.gov/waterquality/standards/2014standards.html>

<sup>p</sup> - Mississippi Water Quality Standards: [http://www.deq.state.ms.us/mdeg.nsf/page/WQSB\\_Water\\_Quality\\_Standards](http://www.deq.state.ms.us/mdeg.nsf/page/WQSB_Water_Quality_Standards)

<sup>q</sup> - U.S. EPA. 2003a. Procedures for the Derivation of Equilibrium Partitioning Sediment

Benchmarks (ESBs) for the Protection of Benthic Organisms: PAH Mixtures. Office of Research and Development, Washington, DC. EPA/600/R-02/013. Available at: <http://www.udel.edu/udaily/2010/jun/images/PAHESB.pdf>

<sup>r</sup> - Office of Pesticide Programs (OPP) Aquatic Life Benchmarks: <http://www.epa.gov/pesticide-science-and-assessing-pesticide-risks/aquatic-life-benchmarks-pesticide-registration>

<sup>s</sup> - Louisiana DEQ Water Quality Standards:

<http://www.deq.louisiana.gov/portal/Portals/0/planning/regs/title33/33v09-201512%20Water%20Quality%202a.pdf>

**Table 2a**  
**Region 4 Sediment Screening Values for Hazardous Waste Sites**  
**Non-Narcotic Modes of Action**

Chemical	CAS	Freshwater Sediment Screening Value		Source		
		ESV	RSV			
<b>Inorganic Compounds mg/kg dry weight</b>						
<b>Metals mg/kg dw</b>						
Nickel	7440-02-0	22.7	48.6	b		
Vanadium	7440-62-2	50	57	i		
<b>Bulk Petroleum Hydrocarbons mg/kg dw</b>						
Gasoline Range Organics				12 m		
Total Petroleum Hydrocarbons - Diesel	68334-30-5	340	510	h		
Total Petroleum Hydrocarbons - Residual	68476-53-9	3,600	4,400	h		

**Table 2 Notes:**

**Red font** indicates a bioaccumulative chemical.

\* - indicates protective of aquatic and wildlife receptors.

Shaded gray cells indicate units in µg/kg dry weight.

CAS = chemical abstract service registry number

ESV - Ecological Screening Value for Step 2

RSV - Refinement Screening Value for Step 3a

R - Reactive electrophiles/proelectrophiles

N2 - Polar Narcosis

N3 - Diesters

U - Oxidative phosphorylation uncouplers

H - Herbicides

C - Central nervous system seizure agents

A - Acetylcholinesterase inhibitors

F - Fungicide

E - Endocrine disrupters or reproductive and developmental toxicants

**Table 2a Sources:**

a - Long, Edward R., and Lee G. Morgan. 1991. The Potential for Biological Effects of Sediment-Sorbed Contaminants Tested in the National Status and Trends Program. NOAA Technical Memorandum NOS OMA 52. Used effects range low (ER-L) for chronic and effects range medium (ER-M) for acute.

b - MacDonald, D.D.; Ingersoll, C.G.; Smorong, D.E.; Lindskoog, R.A.; Sloane, G; and T. Biernacki. 2003. Development and Evaluation of Numerical Sediment Quality Assessment Guidelines for Florida Inland Waters. Florida Department of Environmental Protection, Tallahassee, FL. Development and Evaluation of Numerical Sediment Quality Assessment Guidelines for Florida Inland Waters. Used threshold effect concentration (TEC) for the ESV and probable effect concentration (PEC) for the RSV.

c - MacDonald, D.D. 1994. Approach to the Assessment of Sediment Quality in Florida Coastal Waters. Florida Department of Environmental Protection. 1994 Florida Sediment Quality Assessment Guidelines for Florida Coastal Waters.

d - Region 4 Sediment Model based on highest ranked surface water quality ESV from Table 1a. See Equation 3 in text Section 6.2.2.

e - Region 4 Sediment Model based on: (ECOSAR minimum chronic value). See text.

f - Region 4 Sediment Model based on: (lowest predicted surface water value from McGrath & Di Toro (2009). See text.

g - Persaud, D., R. Jaagumagi and A. Hayton. 1993. Guidelines for the protection and management of aquatic sediment quality in Ontario. Ontario Ministry of the Environment. Queen's Printer of Ontario.

h - Washington State Sediment Management Standards, Cleanup Objectives.

[http://www.ecy.wa.gov/programs/tcp/smud\\_standards.htm](http://www.ecy.wa.gov/programs/tcp/smud_standards.htm)

i - Los Alamos National Laboratory ECORISK Database. <http://www.lanl.gov/community-environment/environmental-stewardship/protection/eco-risk-assessment.php>

j - CCME (Canadian Council of Ministers of the Environment). 2003. Canadian Environmental Quality Guidelines: Summary Table December 2003. Canadian Council of Ministers of the Environment, Winnipeg, Manitoba. Available at [http://www.ccme.ca/publications/ceq\\_rcqe.html](http://www.ccme.ca/publications/ceq_rcqe.html)

k - USEPA. 1993. Interim Report on Data and Methods for Assessment of 2,3,7,8 - Tetrachlorodibenzo-p-dioxin Risks to Aquatic Life and Associated Wildlife. EPA/600/R-93/055. Available from the National Service Center for Environmental Publications (NSCEP) Document Number 600R93055. <http://www.epa.gov/nscep/>

**Table 2b**  
**Region 4 Sediment Screening Values for Hazardous Waste Sites**  
**for Narcotic Mode of Action**

Chemical	CAS	Freshwater Sediment Screening Value ( $\mu\text{g/kg}$ 1% OC)		Source		
		ESV	RSV			
<b>Volatile Organic Compounds (VOCs) - <math>\mu\text{g/kg}</math> @ 1% OC</b>						
<b>Monoaromatic Hydrocarbons</b>						
1,2,3-Trimethylbenzene	526-73-8	2,074		c		
1,2,4-Trimethylbenzene	95-63-6	92	2,020	a, b		
1,3,5-Trimethylbenzene	108-67-8	157	1,980	a, b		
Benzene	71-43-2	113	2,840	a, b		
Cymene, p- (4-Isopropyltoluene)	99-87-6	179	1,910	a, b		
Ethylbenzene	100-41-4	272	3,820	a, b		
Isopropylbenzene (Cumene)	98-82-8	33	3,220	a, b		
Styrene (Vinyl benzene)	100-42-5	116	4,000	a, b		
Toluene	108-88-3	145	4,040	a, b		
Xylenes (total)	1330-20-7	103	3,150	a, b		
<b>Semivolatile Organic Compounds (SVOCs) <math>\mu\text{g/kg}</math> @ 1% OC</b>						
<b>Monoaromatic Hydrocarbons</b>						
Pentane						
Cyclopentane						
Hexane						
Cyclohexane						
Heptane						
Octane						
Isooctane						
Nonane						
Decane						
<b>PAHs <math>\mu\text{g/kg dw}</math></b>						
<b>Low molecular weight PAHs (LMW-PAHs)</b>						
1-Methylnaphthalene	90-12-0	*				
2-Methylnaphthalene	91-57-6	*				
Acenaphthene	83-32-9	*				
Acenaphthylene	208-96-8	*				
Anthracene	120-12-7	*				
Fluorene	86-73-7	*				
Naphthalene	91-20-3	*				
<b>Phenanthrene</b>	85-01-8	*				
<b>Total LMW-PAHs</b>		*		b		
<b>High molecular weight PAHs (HMW-PAHs)</b>						
<b>Benz(a)anthracene</b>	56-55-3	*				
<b>Benzo(a)pyrene</b>	50-32-8	*				
<b>Benzo(b)fluoranthene</b>	205-99-2	*				
<b>Benzo(g,h,i)perylene</b>	191-24-2	*				
<b>Benzo(k)fluoranthene</b>	207-08-9	*				
<b>Chrysene</b>	218-01-9	*				
<b>Dibenz(a,h)anthracene</b>	53-70-3	*				
<b>Fluoranthene</b>	206-44-0	*				
<b>Indeno(1,2,3-cd)pyrene</b>	193-39-5	*				
<b>Phenanthrene</b>	85-01-8	*				
Pyrene	129-00-0	*				
<b>Total HMW-PAHs</b>		*		d		
<b>Total PAHs</b>		<b>1,610</b>		f		
<b>PAH-like Compounds <math>\mu\text{g/kg}</math> @ 1% OC unless denoted by shading</b>						
1,1-Biphenyl	92-52-4	197	6,040	a, b		
Dibenzofuran	132-64-9	151	680	a, e		
Quinoline	91-22-5	2,774		c		
Tetrahydrofuran	109-99-9	1,183	2,490	a, b		

**Table 2 Notes:**

\* see Total below.

**Red font** indicates a bioaccumulative chemical.

Gray shaded cells indicate concentration in  $\mu\text{g/kg}$  dry weight

ESV - Ecological Screening Value for Step 2

RSV - Refinement Screening Value for Step 3a

CAS = chemical abstract service registry number

**Table 2a Sources:**

a - Region 4 Sediment Model based on highest ranked surface water quality ESV from Table 1a See Equation 3 in text Section

**Table 2b**  
**Region 4 Sediment Screening Values for Hazardous Waste Sites**  
**for Narcotic Mode of Action**

Chemical	CAS	Freshwater Sediment Screening Value ( $\mu\text{g/kg } 1\% \text{ OC}$ )		Source
		ESV	RSV	

b - Region 4 Sediment Model based on: (ECOSAR minimum chronic value). See text.

c - Region 4 Sediment Model based on: (lowest predicted surface water value from McGrath & Di Toro (2009). See text.

d - MacDonald, D.D. 1994. Approach to the Assessment of Sediment Quality in Florida Coastal Waters. Florida Department of Environmental Protection. 1994 Florida Sediment Quality Assessment Guidelines for Florida Coastal Waters.

e - Washington State Sediment Management Standards, Cleanup Objectives.

f - MacDonald, D.D.; Ingersoll, C.G.; Smörgås, D.E.; Lindsjöö, R.A.; Sloane, G.; and T. Biernacki. 2003. Development and Evaluation of Numerical Sediment Quality Assessment Guidelines for Florida Inland Waters. Florida Department of Environmental Protection, Tallahassee, FL. Development and Evaluation of Numerical Sediment Quality Assessment Guidelines for Florida Inland Waters. Used threshold effect concentration (TEC) for ESV.

## Prys, Paul

---

**From:** Stilman, Terry <Stilman.Terry@epa.gov>  
**Sent:** Friday, September 16, 2016 4:21 PM  
**To:** Jones, Chris  
**Subject:** Fwd: Colonial Pipeline Spill Tables of ecological screening values  
**Attachments:** Tables 1 - Ecological Surface Water Screening Tables 9\_19\_16.xlsx; ATT00001.htm; Table 2 Ecological Sediment Screening Table 9\_16\_16.xlsx; ATT00002.htm; Summary May 2016.xls; ATT00003.htm

Terry Stilman  
Federal On-Scene Coordinator  
U. S. Environmental Protection Agency  
Sent from my iPhone

Begin forwarded message:

**From:** "Thoms, Sharon" <[Thoms.Sharon@epa.gov](mailto:Thoms.Sharon@epa.gov)>  
**To:** "Stilman, Terry" <[Stilman.Terry@epa.gov](mailto:Stilman.Terry@epa.gov)>  
**Subject: FW: Colonial Pipeline Spill Tables of ecological screening values**

Terry,

I will add screening values to the tables later today to fill blank entries. I thought maybe you might want to add MTBE as an analyte. For total petroleum hydrocarbons the interest is mainly in the gasoline range organics rather than the diesel or residual. I was planning to add screening values for C1 – C3 hydrocarbons, etc. to my table.

Sharon

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**From:** Adams, Glenn  
**Sent:** Friday, September 16, 2016 3:20 PM  
**To:** Stilman, Terry <[Stilman.Terry@epa.gov](mailto:Stilman.Terry@epa.gov)>; Harper, Greg <[Harper.Greg@epa.gov](mailto:Harper.Greg@epa.gov)>; Moore, Tony <[moore.tony@epa.gov](mailto:moore.tony@epa.gov)>  
**Cc:** Thoms, Sharon <[Thoms.Sharon@epa.gov](mailto:Thoms.Sharon@epa.gov)>; Thomas, Brett <[Thomas.Brett@epa.gov](mailto:Thomas.Brett@epa.gov)>; Frederick, Tim <[Frederick.Tim@epa.gov](mailto:Frederick.Tim@epa.gov)>; Collins, Arthur <[Collins.Arthur@epa.gov](mailto:Collins.Arthur@epa.gov)>  
**Subject:** FW: Colonial Pipeline Spill Tables of ecological screening values

Terry,

Here is a list of the contaminants that we think would be important to look for in surface water and/or sediments. They are included in these eco (surface water and sediment) screening level table. We don't have eco values for all of these, but my folks are trying to fill in the missing parts. I have also attached the latest version of the RSL table. Eco risk will probably be your "driver" but you can look at the "Tap Water" or soil values in the RSL table for a guide to help you determine potential detection limits. If you collect any data and it exceeds these screening levels, then we can help you look at appropriate action levels for what you are finding (e.g., specifically for fish or swimmers, etc)

As I told you on the phone, I'm in Denver from Sunday thru Friday and won't be of much help to you, but feel free to call if needed. Tim Frederick will be acting for me while I'm out of the office. Below is the contact information for Tim, Brett and Sharon.

I hope this is helpful, but let us know if you have any questions or issues.

Thanks,

Glenn

Tim Frederick, HH Risk 2-8598 (desk) 470-728-7420 (cell)

Brett Thomas, Eco Risk 2-8751 (desk) 404-326-2715 (cell)

Sharon Thoms, Eco Risk 2-8666 (desk) 404-414-3550 (cell)

Glenn Adams, Chief  
Scientific Support Section  
EPA Region 4 Superfund Division  
404-562-8771 (office)

---

**From:** Thoms, Sharon

**Sent:** Friday, September 16, 2016 2:41 PM

**To:** Adams, Glenn <[Adams.Glenn@epa.gov](mailto:Adams.Glenn@epa.gov)>

**Subject:** Colonial Pipeline Spill Tables of ecological screening values

Glenn,

I put the names of the chemicals that are recommended for analysis in the tables, but I have not finished filling out the screening values.

Sharon

Sharon Thoms  
Life Scientist  
Resources & Scientific Integrity Branch  
Superfund Division  
U.S. EPA Region 4  
Atlanta, GA 30303  
(404) 562-8666

Key: I = IRIS; P = PPRTV; A = ATSDR; C = Cal EPA; X = APPENDIX PPRTV SCREEN (See FAQ #27); H = HEAST; F = See FAQ; J = New Jersey; O = EPA Office of Water; E = see user guide Section 2.3.5; L = see user guide on lead; M = mutagen; S = see user guide Section 5; V = volatile; R = RBA applied (See User Guide for Arsenic notice); c = cancer; n = noncancer; * = where: n SL < 100X c SL; ** = where n SL < 10X c SL; SSL values are based on DAF=1; m = Concentration may exceed ceiling limit (See User Guide); s = Concentration may exceed Csat (See User Guide)															Screening Levels						
SFO (mg/kg-day) <sup>-1</sup>	k <sub>e</sub> (ug/m <sup>3</sup> ) <sup>-1</sup>	IUR key	RID <sub>c</sub> (mg/kg-day)	k <sub>e</sub> (mg/m <sup>3</sup> ) <sup>-1</sup>	k <sub>e</sub> muta- gen	GIABS	ABS	C <sub>sat</sub> (mg/kg)	Contaminant			Analyte	CAS No.	Resident Soil (mg/kg) key	Industrial Soil (mg/kg) key	Resident Air (ug/m <sup>3</sup> ) key	Industrial Air (ug/m <sup>3</sup> ) key	Tapwater (ug/L) key	MCL (ug/L)	Risk-based SSL (mg/kg) key	MCL-based SSL (mg/kg)
														Resident Soil (mg/kg) key	Industrial Soil (mg/kg) key	Resident Air (ug/m <sup>3</sup> ) key	Industrial Air (ug/m <sup>3</sup> ) key	Tapwater (ug/L) key	MCL (ug/L)	Risk-based SSL (mg/kg) key	MCL-based SSL (mg/kg)
8.7E-03	I	4.0E-03	I	9.0E-03	I	V	1	0.1	Acephate	30560-19-1	6.2E+01	c*	2.6E+02	c*	8.9E+00	c**	2.0E-03	c**	2.0E-03	c**	
	2.2E-06	I	2.0E-02	9.0E-03	X	V	1	0.1	Acetaldehyde	75-07-0	1.1E+01	c**	4.9E+01	c**	1.3E+00	c**	2.6E+00	c**	5.2E-04	c**	
									Acetochlor	34256-82-1	1.3E+01	n	1.6E+04	n	3.5E+02	n	2.8E-01	n	2.8E-01	n	
9.0E-01	I	3.1E+01	A	V	1		1.1E+05		Acetone	67-64-1	6.1E+04	n	6.7E+05	rms	3.2E+04	n	1.4E+05	n	2.9E+00	n	
	2.0E-03	X	6.0E-02	I	V	1	0.1	Acetone Cyanhydrin	75-86-5	2.8E+06	nm	1.2E+07	nm	2.1E+00	nm	8.8E+00	nm	7.2E-05	c		
									Acetonitrile	75-05-8	8.1E+02	n	3.4E+03	n	6.3E+01	n	2.6E+02	n	8.4E-06	n	
3.8E+00	C	1.3E-03	C	1.0E-01	I	V	1	2.5E+03	Acetophenone	98-86-2	7.8E+03	ns	1.2E+05	rms			1.9E+03	n	5.8E-01	n	
	5.0E-04	I	2.0E-05	I	V	1	0.1	Acetylaminofluorene, 2-	53-96-3	1.4E+01	c	6.0E-01	c	2.2E-03	c	9.4E-03	c	1.6E-02	c		
									Acrolein	107-02-8	1.4E+01	n	6.0E-01	n	8.8E-02	n	4.2E-02	n	8.4E-06	n	
5.0E-01	I	1.0E-04	I	2.0E-03	I	M	1	0.1	Acrylamide	79-06-1	2.4E+01	c	4.6E+00	c	1.0E-02	c	1.2E-01	c	1.1E-05	c	
	5.0E-01	I	1.0E-03	I	V	1	0.1	Acrylic Acid	79-10-7	9.9E+01	n	4.2E+02	n	1.0E+00	n	4.4E+00	n	4.2E-04	n		
									Acrylonitrile	107-13-1	2.5E+01	c*	1.1E+00	c*	4.1E-02	c*	1.8E-01	c*	1.1E-05	c*	
5.6E-02	C	1.0E-02	P	6.0E-03	I	V	1	0.1	Adiponitrile	111-69-3	8.5E+06	nm	3.8E+07	nm	6.3E+00	n	2.6E+01	n	2.0E+00	8.7E-04	
	1.0E-03	I	1	0.1					Alachlor	15972-60-8	9.7E+00	c*	4.1E+01	c			1.1E+00	c	1.6E-03		
									Aldicarb	116-06-3	6.3E+01	n	8.2E+02	n			2.0E+01	c	4.9E-03	n	
1.7E+01	I	4.9E-03	I	3.0E-05	I	V	1		Aldicarb Sulfone	1646-88-4	6.3E+01	n	8.2E+02	n			2.0E+00	4.4E-04		8.8E-04	
									Aldicarb sulfoxide	1646-87-3	309-00-2					4.0E+00					
									Aldrin	3.9E-02	c*	1.8E-01	c	5.7E-04	c	2.5E-03	c	9.2E-04	c		
2.1E-02	C	6.0E-06	C	5.0E-03	I	V	1	0.1	Alliyl Alcohol	107-18-6	3.5E+00	n	1.5E+01	n	1.0E-01	n	4.4E-01	n	4.2E-05	n	
	1.0E+00	P	5.0E-03	P	1		1.4E+03		Allyl Chloride	107-05-1	7.2E-01	c**	3.2E+00	c**	4.70E-01	c**	2.00E+00	c**	2.3E-04	c**	
									Aluminum	7429-90-5	7.7E+04	n	1.1E+06	nm	5.2E+00	n	2.0E+04	n	3.0E+04	n	
2.1E+01	C	6.0E-03	C	4.0E-04	I	V	1	0.1	Aluminum Phosphide	20859-73-8	3.1E+01	n	4.7E+02	n			8.0E+00	n			
	9.0E-03	I	1	0.1					Ametryn	834-12-8	5.7E+02	n	7.4E+03	n			1.5E+02	n	1.6E-01	n	
									Aminobiphenyl, 4-	92-67-1	2.6E+02	c	1.1E-01	c	4.7E-04	c	2.0E-03	c	1.5E-05	c	
8.0E-02	P	1	0.1						Aminophenol, m-	591-27-5	5.1E+03	n	6.6E+04	n			1.6E+03	n	6.1E-01	n	
	2.0E-02	P	1	0.1					Aminophenol, p-	123-30-8	1.3E+03	n	1.6E+04	n			4.0E+02	n	1.5E-01	n	
	2.5E-03	I	1	0.1					Amitraz	33089-61-1	1.6E+02	n	2.1E+03	n			8.2E+00	n	4.2E+00	n	
2.0E-01	I	1.0E-01	I	V	1				Ammonia	7664-41-7	1.6E+04	n	2.3E+05	nm	1.0E+02	n	4.4E+02	n			
	2.0E-01	I	3.0E-03	V	1		1.4E+04		Ammonium Sulfamate	7773-06-0	8.2E+01	n	3.4E+02	n	3.1E+00	n	1.3E+01	n	1.3E-03	n	
5.7E-03	I	1.6E-06	C	7.0E-03	P	1	0.1	Aniline	82-53-1	9.5E+01	c**	4.0E+02	c*	1.0E+00	n	4.4E+00	n	4.6E-03	c*		
4.0E-02	P	2.0E-03	X	4.0E-04	I	V	0.15	Anthraquinone, 9,10-	84-65-1	9.4E+01	c*	5.7E+01	c*	4.5E+01	c	4.4E+00	n	1.4E-02	c*		
								Antimony (metallic)	7440-36-0	3.1E+01	n	4.7E+02	n			7.8E+00	n	3.5E-01	n		
5.0E-04	H	5.0E-04	H	4.0E-04	I	V	0.15	Antimony Pentoxide	1314-60-9	3.9E+01	n	5.8E+02	n			9.7E+00	n				
								Antimony Tetroxide	1332-81-8	3.1E+01	n	4.7E+02	n			7.8E+00	n				
								Antimony Trioxide	1309-64-4	2.8E+05	n	1.2E+06	n	2.1E-01	n	8.8E-01	n				
1.5E+00	I	4.3E-03	I	3.0E-04	I	1.5E-05	C	1	Arsenic, Inorganic	7440-38-2	6.8E-01	c*	3.0E+00	c*	6.5E-04	c*	2.9E-03	c	1.0E+01	1.5E-03	
	3.5E-06	C	5.0E-05	I	1	0.1			Arsine	7794-42-1	2.7E-01	n	4.1E+00	n	5.2E-02	n	2.2E-01	n	7.0E-02	n	
	5.0E-02	I	1	0.1					Asulam	3337-71-1	3.2E+03	n	4.1E+04	n			1.0E+03	n	2.6E-01	n	
2.3E-01	C	3.5E-02	I	1	0.1				Atrazine	1812-24-9	2.4E+00	c	1.0E+01	c			3.0E-01	c	3.0E+00	2.0E-04	
8.8E-01	C	2.5E-04	C	4.0E-04	I	V	1	0.1	Auramine	412-08-8	6.2E-01	c	2.6E+00	c	1.1E-02	c	4.9E-02	c	6.1E-04	c	
								Avermectin B1	85119-55-3	2.5E+01	n	3.3E+02	n			8.0E+00	n	1.4E+01	n		
1.1E-01	I	3.1E-05	I	3.0E-03	A	V	1	0.1	Azinphos-methyl	98-50-0	1.9E+01	n	2.5E+03	n	1.0E+01	n	4.4E+01	n	1.7E-02	n	
								Azobenzene	103-33-3	5.6E+00	c	2.6E+01	c	9.1E-02	c	4.0E-01	c	9.3E-04	c		
								Azodicarbonamide	123-77-3	8.6E+03	n	4.0E+04	n	7.3E-03	n	3.1E-02	n	6.8E+00	n		
2.0E-01	I	5.0E-04	H	0.07					Barium	7440-39-3	1.5E+04	n	2.2E+05	nm	5.2E-01	n	2.2E+00	n	2.0E+03	8.2E+01	
	5.0E-01	C	2.0E-02	C	2.0E-04	M	0.025		Barium Chromate	10294-40-3	3.0E+01	c	6.2E+00	c	6.8E-06	c	8.2E-05	c	5.6E+01	n	
								Bentfuralin	1861-40-1	2.3E+01	n	3.5E+05	nm			1.7E+03	n				
5.0E-02	I	1	0.1					Benomyl	17804-35-2	3.2E+03	n	4.1E+04	n			9.7E+00	n	8.5E-01	n		
								Benzensulfuron-methyl	83055-99-6	1.3E+04	n	1.6E+05	nm			3.9E+03	n	1.0E+00	n		
								Bentazon	25057-89-0	1.9E+03	n	2.5E+04	n			5.7E+02	n	1.2E+01	n		
4.0E-03	P	1.0E-01	I	V	1	0.1	1.2E+03		Benzaldehyde	100-52-7	1.7E+02	c*	8.2E+02	c			1.9E+01	c	4.1E-03	c	
5.5E-02	I	7.8E-06	I	4.0E-03	I	V	1	0.1	Benzene	71-43-2	1.2E+00	c*	5.1E+00	c*	3.6E-01	c*	1.6E+00	c*	2.3E-04	c*	
	1.0E-01	X	3.0E-04	X	1	0.1			Benzendiamine-2-methyl sulfate, 1,4-	6369-59-1	5.4E+00	c**	2.3E+01	c*			4.7E-01	c*	2.2E-04	c**	
1.0E-03	P	V	1	0.1					Benzethiol	108-98-5	7.8E+01	n	1.2E+03	n			1.7E+01	n	1.1E-02	n	
2.3E+02	I	6.7E-02	I	3.0E-03	I	M	1	0.1	Benzidine	92-67-5	5.3E-04	c	1.0E-02	c	1.5E-05	c	1.8E-04	c	2.8E-07	c	
	4.0E+00	I	1	0.1					Benzoic Acid	65-85-0	2.5E+05	n	3.3E+06	nm			1.5E+04	n	1.5E+01	n	
1.3E+01	I	V	1	0.1					Benzotrichloride	98-07-7	5.3E-02	c	2.5E-01	c			3.0E-03	c	6.6E-06	c	
1.7E-01	I	4.9E-05	C	2.0E-03	P	V	1	1.5E+03	Benzyl Alcohol	100-51-6	6.3E+03	n	8.2E+04	n			2.0E+03	n	4.8E-01	n	
								Benzyl Chloride	100-44-7	1.1E+00	c*	4.8E+									

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SFO (mg/kg-day) <sup>-1</sup>	k <sub>e</sub> (ug/m <sup>3</sup> ) <sup>-1</sup>	IUR	k <sub>e</sub> RfD <sub>c</sub> (mg/kg-day)	k <sub>e</sub> RfC, k <sub>e</sub> muta- gen	k <sub>e</sub> GIABS	C <sub>sat</sub> (mg/kg)	Contaminant				Screening Levels				Protection of Ground Water SSLs																																		
							Analyte		CAS No.	Resident Soil (mg/kg) key	Industrial Soil (mg/kg) key	Resident Air (ug/m <sup>3</sup> ) key	Industrial Air (ug/m <sup>3</sup> ) key	Tapwater (ug/L) key	MCL (ug/L)	Risk-based SSL (mg/kg) key	MCL-based SSL (mg/kg)																																
6.2E-02	I	3.7E-05	C	2.0E-02	I	V	1	9.3E+02	Bromodichloromethane	75-27-4	2.9E-01	c	1.3E+00	c	7.6E-02	c	3.3E-01	c	1.3E-01	c	8.0E+01(F)	3.6E-05	c	2.2E-02																									
7.9E-03	I	1.1E-06	I	2.0E-02	V	V	1	9.2E+02	Bromoform	75-25-2	1.9E+01	c*	8.6E+01	n	2.6E+00	n	1.1E+01	c	3.3E+00	c	8.0E+01(F)	8.7E-04	c	2.1E-02																									
									1.4E-03	I	5.0E-03	I	V	1	3.6E+03	Bromomethane	74-83-9	6.8E+00	n	3.0E+01	n	5.2E+00	n	2.2E+01	n	7.5E+00	n		1.9E-03	n																			
									5.0E-03	H	V	V	1			2104-96-3	Bromophos	3.9E+02	n	5.8E+03	n					3.5E+01	n		1.5E-01	n																			
									2.0E-02	I	V	V	1	0.1		1689-84-5	Bromoxylin	1.3E+03	n	1.6E+04	n					3.3E+02	n		2.8E-01	n																			
									2.0E-02	I	V	V	1			106-99-0	Bromoxynil Octanoate	1.6E+03	n	2.3E+04	n					1.4E+02	n		1.2E+00	n																			
									3.4E+00	C	3.0E-05	I	V	1	6.7E+02	Butadiene, 1,3-	71-36-3	5.8E-02	c*	2.6E-01	c*	9.4E-02	c	4.1E-01	c*	1.8E-02	c		9.9E-06	c																			
									1.0E-01	I	V	V	1	7.6E+03	Butanol, N-	2008-41-5	3.9E+03	n	5.8E+04	n					4.6E+02	n		4.5E-01	n																				
									2.0E-04	C	5.7E-08	P	3.0E+01	P	V	1	2.1E+04	Butyl alcohol, sec-	25013-16-5	1.3E+05	n	1.5E+06	n	3.1E+04	n	1.3E+05	n	2.4E+00	n		5.0E+00	n																	
									3.6E-03	P	V	V	1	0.1		128-37-0	Butylated hydroxyanisole	7.8E+02	c	4.9E+01	c	1.1E+04	c	2.2E+02	c	1.5E+02	c		1.2E+00	n																			
									5.0E-02	P	V	V	1	1.1E+02	Butylbenzene, n-	104-51-8	3.9E+03	ns	5.8E+04	ns					1.0E+03	n		3.2E+00	n																				
									1.0E-01	X	V	V	1	1.5E+02	Butylbenzene, sec-	135-98-8	7.8E+03	n	1.2E+05	n					2.0E+03	n		5.9E+00	n																				
									1.0E-01	X	V	V	1	0.1		98-06-6	Cacodylic Acid	7.8E+03	c	1.2E+05	n					6.9E+02	n		1.6E+00	n																			
									1.8E-03	I	1.0E-03	A	1.0E-05	A	0.025	0.001	75-60-5	Cadmium (Diet)	1.3E+03	n	1.6E+04	n					4.0E+02	n		1.1E-01	n																		
									1.8E-03	I	5.0E-04	I	1.0E-05	A	0.05	0.001	7440-43-9	Cadmium (Water)	3.0E-01	c	6.2E+00	c	6.8E-03	c*	9.2E+00	n	5.0E+00	n		6.9E-01	n		3.8E-01	n															
									5.0E-01	C	2.0E-02	C	2.0E-04	C	M	0.025	105-60-2	Calcium Chromate	3.1E+04	n	4.0E+05	n	2.3E+00	n	9.6E+00	n		9.9E-03	n		2.5E+00	n																	
									1.5E-01	C	4.3E-05	C	2.0E-03	I	1	0.1	12425-06-1	Captafol	3.6E+00	c*	1.5E+01	c	6.5E-02	c	2.9E-01	c		7.1E-04	c*		2.2E-02	c*																	
									2.3E-03	C	6.6E-07	C	1.3E-01	I	1	0.1	133-06-2	Captan	2.4E+02	c*	1.0E+03	c	4.3E+00	c	1.9E+01	c		3.1E+01	c*		1.7E+00	n																	
									1.0E-01	I	1	0.1	1	0.1		63-25-2	Carbyl	6.3E+03	n	8.2E+04	n					1.8E+03	n																						
									5.0E-03	I	1	0.1	1	0.1		1563-66-2	Carbofuran	3.2E+02	n	4.1E+03	n					9.4E+01	n		4.0E+01	n		3.7E-02	n																
									1.0E-01	I	1	0.1	1	0.1		75-15-0	Carbon Disulfide	7.7E+02	n	3.5E+03	ns	7.3E+02	n	3.1E+03	n		8.1E+02	n		2.4E-01	n		2.4E-01	n															
									7.0E-02	I	6.0E-06	I	4.0E-03	I	1.0E-01	I	1	4.6E+02	Carbon Tetrachloride	56-23-5	6.5E-01	c	2.9E+00	c	4.7E-01	c	2.0E+00	c	4.6E-01	c	5.0E+00	n		1.8E-04	c		1.9E-03	n											
									1.0E-01	P	V	V	1	5.9E+03	Carbonyl Sulfide	463-58-1	6.7E+01	n	2.8E+02	n	1.0E+02	n	4.4E+02	n	2.1E+02	n		5.1E-01	n		1.2E+00	n		1.0E+00	n														
									1.0E-02	I	V	V	1	0.1		55285-14-8	Carbosulfan	6.3E+02	c	8.2E+03	n					5.1E+01	n		1.2E+00	n		1.0E+00	n																
									1.0E-01	I	V	V	1	0.1		5234-68-4	Carboxin	6.3E+03	n	8.2E+04	n					1.9E+03	n																						
									9.0E-04	I	V	V	1	0.1		1306-38-3	Ceric oxide	1.3E+06	nm	5.4E+06	nm	9.4E-01	n	3.9E+00	n																								
									1.0E-01	I	V	V	1	0.1		302-17-0	Chloral Hydrate	7.8E+03	n	1.2E+05	nm					2.0E+03	n		4.0E-01	n		7.0E-02	n																
									1.5E-02	I	V	V	1	0.1		133-90-4	Chloramben	9.5E+02	n	1.2E+04	n					2.9E+02	n		7.0E-02	n																			
									4.0E-01	H	1.0E-04	I	5.0E-04	I	V	1	0.1	118-75-2	Chloranil	1.3E+00	c	5.7E+00	c					1.8E-01	c		1.5E-04	c		2.7E-03	c*		2.7E-01	c											
									3.5E-01	I	1.0E-04	I	5.0E-04	I	V	1	0.04	143-50-0	Chlordane	1.7E+00	c*	7.7E+00	c	4.0E+05	n	9.6E+00	n		2.4E-02	c		3.1E-02	c*		1.2E-04	c													
									1.0E+00	A	V	V	1	2.8E+03	Chlordecone (Kepone)	470-90-6	4.4E+01	n	5.7E+02	n					1.1E+01	n		3.1E-02	n																				
									2.0E-02	I	V	V	1	0.1		90982-32-4	Chlorfenphos	1.3E+03	n	1.6E+04	n					3.9E+02	n		1.3E-01	n																			
									1.0E-01	I	V	V	1	0.1		7792-55-5	Chlorfmuron, Ethyl-	1.8E+01	n	7.8E+01	n	1.5E-01	n			6.4E-01	n		1.4E-04	n																			
									3.0E-02	I	2.0E-04	I	V	V	1	0.04	75-68-3	Chlorine Dioxide	2.3E+04	n	3.4E+04	n	2.1E-01	n	8.8E-01	n		4.2E-01	c																				
									3.0E-02	I	V	V	1	0.04		75-68-3	Chlorite (Sodium Salt)	2.3E+02	n	3.5E+04	n					6.0E+02	n		1.0E+03	n		5.2E+01	n																
									5.0E+01	I	V	V	1	1.2E+03	Chloro-1,1-difluoroethane, 1-	75-68-3	5.4E+04	n	2.3E+05	n	5.2E+04	n	2.2E+05	n	1.0E+05	n		5.4E+03	n																				
									3.0E-04	I	2.0E-02	H	2.0E-02	I	V	1	0.1	126-99-8	Chloro-1,3-butadiene	1.0E-02	c	4.4E-02	c	9.4E-03	c	4.1E-02	c	1.9E-02	c		9.8E-06	c																	
									4.6E-01	H	1.0E-04	P	7.7E-05	C	3.0E-03	X	1	0.1	91-69-2	Chloro-2-methylaniline, HO-4	1.2E+00	c	5.0E+00	c	3.4E+00	c	4.1E-02	c	1.7E-01	c		1.5E-04	c																
									2.7E-01	X	V	V	1	0.1		91-69-2	Chloroacetaldehyde, 2-	107-20-0	2.6E+00	c	1.2E+01	c					2.9E-01	c		5.8E-05	c		1.2E-02	c															
									2.0E-01	P	V	V	1	0.1		108-90-7	Chloroacetic Acid	2.8E+02	c	1.3E+03	n	5.2E+01	n	2.2E+02	n	7.8E+01	n		3.7E-01	c		1.0E+02	c		5.3E-02	n		6.8E-02	n										
									1.1E-01	C	3.1E-05	I	2.0E-02	C	V	1	0.1	510-15-6	Chlorobenzene	4.9E+00	c	2.1E+01	c	9.1E-02	c	4																							

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SFO (mg/kg-day) <sup>-1</sup>	k <sub>e</sub> (ug/m <sup>3</sup> ) <sup>-1</sup>	IUR	k <sub>e</sub> RfD <sub>c</sub> (mg/kg-day)	k <sub>e</sub> RfC <sub>c</sub> (mg/m <sup>3</sup> ) <sup>-1</sup>	k <sub>e</sub> o muta- gen	GIABS	ABS	C <sub>sat</sub> (mg/kg)	Contaminant			Screening Levels										
									Analyte			CAS No.	Resident Soil (mg/kg) key	Industrial Soil (mg/kg) key	Resident Air (ug/m <sup>3</sup> ) key	Industrial Air (ug/m <sup>3</sup> ) key	Tapwater (ug/L) key	MCL (ug/L)	Risk-based SSL (mg/kg) key	MCL-based SSL (mg/kg)		
9.0E-03	P	3.0E-04	P	6.0E-06	P	1		1	Cobalt	7440-48-4	2.3E+01	n	3.5E+02	n	3.1E-04	c*	1.4E-03	c*	6.0E+00	n	2.7E-01	n
6.2E-04	I		V	M	1				Coke Oven Emissions	8007-45-2					1.6E-03	c	2.0E-02	c				
4.0E-02	H					1	1		Copper	7440-50-8	3.1E+03	n	4.7E+04	n					8.0E+02	n	1.3E+03	2.8E+01
5.0E-02	I	6.0E-01	C			1	0.1		Cresol, m-	108-39-4	3.2E+02	n	4.1E+04	n	6.3E+02	n	2.6E+03	n	9.3E+02	n	7.4E-01	4.6E+01
5.0E-02	I	6.0E-01	C			1	0.1		Cresol, o-	95-48-7	3.2E+03	n	4.1E+04	n	6.3E+02	n	2.6E+03	n	9.3E+02	n	7.5E-01	n
1.0E-01	A	6.0E-01	C			1	0.1		Cresol, p-	106-44-5	6.3E-03	n	8.2E+04	n	6.3E+02	n	2.6E+03	n	1.9E+03	n	1.5E+00	n
1.0E-01	A					1	0.1		Cresol, p-chloro-m-	59-50-7	6.3E-03	n	8.2E+04	n					1.4E+03	n	1.7E+00	n
1.9E+00	H					1	0.1		Cresols	1319-77-3	6.3E+03	n	8.2E+04	n	6.3E+02	n	2.6E+03	n	1.5E+03	n	1.3E+00	
1.0E-01	A	6.0E-01	C			1	0.1		Crotonaldehyde, trans-	123-73-9	3.7E-01	c	1.7E+00	c					4.0E-02	c	8.2E-06	c
1.0E-01	P	V				1	1.7E+00		Cumene	99-82-8	1.9E+03	ns	9.9E+03	ns	4.2E+02	n	1.8E+03	n	4.5E+02	n	7.4E-01	n
2.2E-01	C	6.3E-05	C			1	0.1		Cupferron	135-20-6	2.5E+00	c	1.0E+01	c	4.5E-02	c	1.9E-01	c	3.5E-01	c	6.1E-04	c
8.4E-01	H	2.0E-03	H			1	0.1		Cyanazine	21725-46-2	6.5E-01	c	2.7E+00	c					8.8E-02	c	4.1E-05	c
								Cyanides														
1.0E-03	I					1			-Calcium Cyanide	592-01-8	7.8E+01	n	1.2E+03	n					2.0E+01	n		n
5.0E-03	I					1			-Copper Cyanide	544-92-3	3.9E+02	n	5.8E+03	n					1.0E+02	n		n
6.0E-04	I	8.0E-04	S	V		1	9.5E+05		Cyanide (CN-)	57-12-5	2.3E+01	n	1.5E+02	n	8.3E-01	n	3.5E+00	n	1.5E+00	n	2.0E+02	1.5E-02
																				2.0E+00		
1.0E-03	I		V			1			-Cyanogen	460-19-5	7.8E+01	n	1.2E+03	n					2.0E+01	n		n
9.0E-02	I	V				1			-Cyanogen Bromide	506-68-3	7.0E+03	n	1.1E+05	nm					1.8E+03	n		n
5.0E-02	I	V				1			-Cyanogen Chloride	506-77-4	3.9E+03	n	5.8E+04	n					1.0E+03	n		n
6.0E-04	I	8.0E-04	I	V		1	1.0E+07		Hydrogen Cyanide	74-90-8	2.3E+01	n	1.5E+02	n	8.3E-01	n	3.5E+00	n	1.5E+00	n		1.5E-02
2.0E-03	I					1			-Potassium Cyanide	151-50-8	1.6E+02	n	2.3E+03	n					4.0E+01	n		n
5.0E-03	I					1	0.04		-Potassium Silver Cyanide	506-61-6	3.9E+02	n	5.8E+03	n					8.2E+01	n		n
1.0E-01	I					0.04			-Silver Cyanide	506-64-9	7.8E+03	n	1.2E+05	nm					1.8E+03	n		n
1.0E-03	I					1			-Sodium Cyanide	143-33-9	7.8E+01	n	1.2E+03	n					2.0E+01	n		n
2.0E-04	P					1			-Thiocyanates	NA	1.6E+01	n	2.3E+02	n					4.0E+00	n		n
2.0E-04	X	V				1			L-Thiocyanic Acid	463-56-9	1.6E+01	n	2.3E+02	n					4.0E+00	n		n
5.0E-02	I					1			-Zinc Cyanide	557-21-1	3.9E+03	n	5.8E+04	n					1.0E+03	n		n
6.0E+00	I	V				1	1.2E+02		Cyclohexane	110-82-7	6.5E+03	ns	2.7E+04	ns	6.3E+03	n	2.6E+04	n	1.3E+01	n		
2.3E-02	H					1	0.1		Cyclohexane, 1,2,3,4,5-pentabromo-6-chloro-	87-84-3	2.4E+00	c	1.0E+02	c					2.4E+00	c	1.4E-02	c
5.0E+00	I	7.0E-01	P	V		1	5.1E+03		Cyclohexane	108-94-1	2.8E+04	n	3.1E+05	nm	7.3E+02	n	3.1E+03	n	1.4E+03	n	3.4E-01	n
5.0E-03	P	1.0E+00	X	V		1	2.8E+02		Cyclohexene	110-83-8	3.1E+02	ns	3.1E+03	ns	1.0E+03	n	4.4E+03	n	7.0E+01	n	4.6E-02	n
2.0E-01	I		V			1	2.9E+05		Cyclohexylamine	108-91-8	1.6E+04	n	2.3E+05	nm					3.8E+03	n	1.0E+00	n
2.5E-02	I					1	0.1		Cyfluthrin	6335-37-5	1.6E+03	n	2.1E+04	n					1.2E+02	n	3.1E+01	n
5.0E-03	I					1	0.1		Cypermethrin	62315-07-8	6.3E+02	n	8.2E+03	n					2.0E+02	n	3.2E+01	n
1.0E-02	I					1	0.1		Cyromazine	62215-27-8	4.7E+02	n	6.2E+03	n					1.5E+02	n	3.8E-02	n
7.5E-03	I					1	0.1		DDD	72-54-8	2.3E+00	c	9.6E+00	c	4.1E-02	c	1.8E-01	c	3.2E-02	c	7.5E-03	c
3.4E-01	I	9.7E-05	C		V	1			DDE, p,p'	72-55-9	2.0E+00	c	9.3E+00	c	2.9E-02	c	1.3E-01	c	4.6E-02	c	1.1E-02	c
3.4E-01	I	9.7E-05	I			1	0.03		DDT	50-29-3	1.9E+00	c	8.5E+00	c	2.9E-02	c	1.3E-01	c	2.3E-01	c	7.7E-02	c*
3.0E-02	I					1	0.1		Dalapon	75-99-0	1.9E+03	n	2.5E+04	n					6.0E+00	n	2.0E+02	1.2E-01
1.8E-02	C	5.1E-06	C	1.5E-01	I	1	0.1		Daminozide	1596-84-5	3.0E+01	c	1.3E+02	c	5.5E-01	c	2.4E+00	c	4.3E+00	c	9.5E-04	c
7.0E-04	I	7.0E-03	I	1.0E-01	I	1	0.1		Decabromodiphenyl ether, 2,2',3,3',4,4',5,5',6,6'-hexa- (BDE-209)	1163-19-5	4.4E+02	n	3.0E+03	c**					1.1E+02	c	6.2E+01	c**
4.0E-05	I					1	0.1		Demeton	8005-48-3	2.5E+00	n	3.3E+01	n					4.2E-01	n		n
1.2E-03	I		V			1	0.1		Di(2-ethylhexyl)adipate	103-23-1	4.5E+02	c*	1.9E+03	c					6.5E+01	c	4.0E+02	4.7E+00
6.1E-02	H					1			Diellate	200-16-4	8.9E+00	c	3.8E+01	c					5.4E-01	c	8.0E-04	c
7.0E-04	A					1	0.1		Diazinon	333-41-5	4.4E+01	n	5.7E+02	n					1.0E+01	n	6.5E-02	n
8.0E-01	P	6.0E-03	P	2.0E-04	I	V	1	9.8E+02	Dibenzothiophene	132-65-0	7.8E+02	n	1.2E+04	n					6.5E+01	c	1.2E+00	n
4.0E-04	X	V				1	1.6E+02		Dibromobenzene, 1,4-	96-12-8	5.3E-03	c	6.4E-02	c	1.7E-04	c	2.0E-03	c	3.3E-04	c	1.4E-05	c
1.0E-02	I		V			1			Dibromobenzene, 1,4-	106-37-6	7.8E+02	n	1.2E+04	n					1.3E+02	n		n
2.0E-02	I	V				1	8.0E+02		Dibromochloromethane	124-48-1	8.3E+00	c	3.9E+01	c					8.7E-01	c	8.0E+01(F)	5.0E-02
2.0E+00	I	6.0E-04	I	9.0E-03	I	V	1	1.3E+03	Dibromoethane, 1,2-	106-93-4	3.6E-02	c	1.6E-01	c	4.7E-03	c	2.0E-02	c	7.5E-03	c	2.1E-02	c
3.0E-04	P	4.0E-03	X	V		1	2.8E+03		Dibromomethane (Methylene Bromide)	74-95-3	2.4E+01	c	9.9E+01	n	4.2E+00	n	1.8E+0					

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SFO (mg/kg-day) <sup>-1</sup>	IUR (ug/m <sup>3</sup> ) <sup>-1</sup>	k <sub>e</sub> y (mg/kg-day)	RID <sub>c</sub>	k <sub>e</sub> y (mg/m <sup>3</sup> ) <sup>-1</sup>	k <sub>e</sub> o (mg/m <sup>3</sup> ) <sup>-1</sup>	muta- gen	GIABS	ABS	C <sub>sat</sub> (mg/kg)	Contaminant			Screening Levels										
										Analyte			CAS No.	Resident Soil (mg/kg) key	Industrial Soil (mg/kg) key	Resident Air (ug/m <sup>3</sup> ) key	Industrial Air (ug/m <sup>3</sup> ) key	Tapwater (ug/L) key	MCL (ug/L)	Risk-based SSL (mg/kg) key	MCL-based SSL (mg/kg)		
2.9E-01	I 8.3E-05	C 5.0E-04	I 5.0E-04	I 1.0E-04	I 1.0E-04	I 1.0E-04	1	0.1	2.6E+02	Dichlorvos	62-73-7	1.9E+00	c*	7.9E+00	c*	3.4E-02	c*	1.5E-01	c*	2.6E-01	c*	8.1E-05	c*
										Dicropothos	141-66-2	6.3E+00	n	8.2E+01	n					2.0E+00	n	4.7E-04	n
										Dicyclopentadiene	77-73-6	1.3E+00	n	5.4E+00	n	3.1E-01	n	1.3E+00	n	6.3E-01	n	2.2E-03	n
1.6E+01	I 4.6E-03	I 5.0E-05	I 5.0E-05	I 3.0E-04	P 3.0E-04	X V	1	0.1		Dieldrin	60-57-1	3.4E-02	c*	1.4E-01	c	6.1E-04	c	2.7E-03	c	1.8E-03	c	7.1E-05	c
										Diesel Engine Exhaust	NA					9.4E-03	c	4.1E-02	c				
										Diethanolamine	111-42-2	1.3E+02	n	1.6E+03	n	2.1E-01	n	8.8E-01	n	4.0E+01	n	8.1E-03	n
										Diethylene Glycol Monobutyl Ether	112-34-5	1.9E+03	n	2.4E+04	n	1.0E-01	n	4.4E-01	n	6.0E+02	n	1.3E-01	n
										Diethylene Glycol Monethyl Ether	111-90-0	3.8E+03	n	4.8E+04	n	3.1E-01	n	1.3E+00	n	1.2E+03	n	2.4E-01	n
										Diethylformamide	617-84-5	7.8E+01	n	1.2E+03	n					2.0E+01	n	4.1E-03	n
3.5E+02	C 1.0E-01	C 8.0E-02	C 2.0E-02	I 1	I 1	I 1	1	0.1		Diethylstilbestrol	56-53-1	1.6E-03	c	6.6E-03	c	2.8E-05	c	1.2E-04	c	5.1E-05	c	2.8E-05	c
										Difenzoquat	43222-48-6	5.1E+03	n	6.6E+04	n					1.6E+03	n	2.5E+02	n
										Dibenzbenzon	35367-38-5	1.3E+03	n	1.6E+04	n					2.9E+02	n	3.3E-01	n
4.4E-02	C 1.3E-05	C 8.0E-02	C 7.0E-01	P V	V	V	1	0.1	2.3E+03	Diffluoroethane, 1,1-	75-37-6	4.8E+04	ns	2.0E+05	rms	4.2E+04	n	1.8E+05	n	8.3E+04	c	2.8E+01	n
										Dihydrosafrole	94-58-6	9.9E+00	c	4.5E+01	c	2.2E-01	c	9.4E-01	c	3.0E-01	c	1.9E-04	c
										Diisopropyl Ether	108-20-3	2.2E+02	n	9.4E+03	n	7.3E+02	n	3.1E+03	n	1.5E+03	n	3.7E-01	n
										Diisopropyl Methylphosphonate	1445-75-6	6.3E+03	ns	9.3E+04	ns					1.6E+03	n	4.5E-01	n
										Dimethyltin	55290-64-7	1.3E+03	n	1.6E+04	n					4.0E+02	n	8.8E-02	n
										Dimethoate	60-51-5	1.3E+01	n	1.6E+02	n					4.0E+00	n	9.0E-04	n
1.6E+00	P	1.0E-02	1.0E-03	P	1.0E-02	P	1	0.1		Dimethoxybenzidine, 3,3'	119-90-4	3.4E-01	c	1.4E+00	c					4.7E-02	c	5.8E-05	c
1.7E-03	P	6.0E-02	6.0E-00	C	6.0E-02	C	1	0.1		Dimethyl methylphosphonate	756-79-6	3.2E+02	c*	1.4E+03	c*					4.6E+01	c	9.6E-03	c*
4.6E+00	C 1.3E-03	C 1.3E-03	C 1.3E-03	C 1.3E-03	C 1.3E-03	C 1.3E-03	1	0.1		Dimethylaminium azobenzene [p-]	60-11-7	1.2E-01	c	5.0E-01	c	2.2E-03	c	9.4E-03	c	5.0E-03	c	2.1E-05	c
5.8E-01	H	2.0E-01	2.0E-01	P	2.0E-03	X	1	0.1		Dimethylaniline HCl, 2,4-	21436-96-4	9.4E-01	c	4.0E+00	c					1.3E-01	c	1.2E-04	c
2.0E-01	P	2.0E-03	2.0E-03	P	2.0E-03	X	1	0.1		Dimethylaniline, 2,4-	95-68-1	2.7E+00	c*	1.1E+01	c					3.7E-01	c	2.1E-04	c
										Dimethylaniline, N,N-	121-69-7	1.6E+02	n	2.3E+03	n					3.5E+01	n	1.3E-02	n
1.1E+01	P	1.0E-01	1.0E-01	P	3.0E-02	I V	1	0.1	1.1E+05	Dimethylbenzidine, 3,3'	119-93-7	4.9E-02	c	2.1E-01	c					6.5E-03	c	4.3E-05	c
										Dimethylformamide	68-12-2	2.6E+03	n	1.5E+04	n	3.1E+01	n	1.3E+02	n	6.1E+01	n	1.2E-02	n
										Dimethylhydrazine, 1,1-	57-14-7	5.7E-02	n	2.4E-01	n	2.1E-03	n	8.8E-03	n	4.2E-03	n	9.3E-07	n
5.5E+02	C 1.6E-01	C 2.0E-02	C 6.0E-01	C 1.0E-01	C 1.0E-01	C 1.0E-01	V	1	1.9E+05	Dimethylhydrazine, 1,2-	540-73-8	8.8E-04	c	4.1E-03	c	1.8E-05	c	7.7E-05	c	2.8E-05	c	6.5E-09	c
										Dimethylphenol, 2,4-	105-67-9	1.3E+03	n	1.6E+04	n					3.6E+02	n	4.2E-01	n
										Dimethylphenol, 2,6-	576-26-1	3.8E+01	n	4.9E+02	n					1.1E+01	n	1.3E-02	n
4.5E-02	C 1.3E-05	C 8.0E-05	C 8.0E-05	C 8.0E-05	C 8.0E-05	C 8.0E-05	I V	1	4.7E+02	Dimethylphenol, 3,4-	95-65-8	6.3E+01	c	8.2E+02	n					1.8E+01	c	2.1E-02	n
										Dimethylvinylchloride	513-37-1	1.1E+00	c	4.8E+00	c	2.2E-01	c	9.4E-01	c	3.3E-01	c	1.1E-04	c
										Dinitro-o-cresol, 4,6-	534-52-1	5.1E+00	n	6.6E+01	n					1.5E+00	n	2.6E-03	n
										Dinitro-o-cyclohexyl Phenol, 4,6-	131-49-5	1.3E+02	n	1.6E+03	n					2.3E+01	n	7.7E-01	n
										Dinitrobenzene, 1,2-	528-29-0	6.3E+00	n	8.2E+01	n					1.9E+00	n	1.8E-03	n
										Dinitrobenzene, 1,3-	98-05-0	6.3E+00	n	8.2E+01	n					2.0E+00	n	1.8E-03	n
6.8E-01	I	2.0E-04	2.0E-04	P	2.0E-04	P	1	0.1		Dinitrobenzene, 1,4-	119-25-4	6.3E+00	n	8.2E+01	n					2.0E+00	n	1.8E-03	n
										Dinitrophenol, 2,4-	51-28-5	1.3E+02	n	1.6E+03	n					3.9E+01	n	4.4E-02	n
										Dinitrotoluene Mixture, 2,4/2,6-	NA	8.0E-01	c	3.4E+00	c					1.1E-01	c	1.5E-04	c
3.1E-01	C 8.9E-05	C 2.0E-03	I	I	I	I	1	0.102		Dinitrotoluene, 2,4-	121-14-2	1.7E+00	c*	7.4E-00	c	3.2E-02	c	1.4E-01	c	2.4E-01	c	3.2E-04	c
1.5E+00	P	3.0E-04	X	1	0.099					Dinitrotoluene, 2,6-	506-20-2	3.6E-01	c*	1.5E+00	c					4.9E-02	c	6.7E-05	c
										Dinitrotoluene, 2,6-Amino-4,6-	35572-78-2	1.5E+02	n	2.3E+03	n					3.9E+01	n	3.0E-02	n
										Dinitrotoluene, 4-Amino-2,6-	19406-51-0	1.5E+02	n	2.3E+03	n					3.9E+01	n	3.0E-02	n
										Dinitrotoluene, Technical grade	25321-14-6	1.2E+00	c*	5.1E+00	c					1.0E-01	c	1.4E-04	c
										Dinoseb	88-85-7	6.3E+01	n	8.2E+02	n					1.5E+01	n	7.0E+00	n
1.0E-01	I	5.0E-06	I	I	3.0E-02	I V	1	0.1	1.2E+05	Dioxane, 1,4-Dioxins	123-91-1	5.3E+00	c	2.4E+01	c	5.6E-01	c*	2.5E+00	c*	4.6E-01	c	9.4E-05	c
										-Hexachlorobenzene-p-dioxin, Mixture	NA	1.0E-04	c	4.7E-04	c	2.2E-06	c	9.4E-06	c	1.3E-05	c	1.7E-05	c
1.3E+05	C 3.8E-01	C 3.0E-02	I	I	I	V	1	0.03		-TCDD, 2,3,7,8-Tetrachlorodibenzo-p-dioxin, Mixture	1746-01-6	4.8E-06	c*	2.2E-05	c*	7.4E-08	c	3.2E-07	c	1.2E-07	c	3.0E-05	c
										Diphenamid	957-51-7	1.9E+03	n	2.5E+04	n					5.3E+02	n	5.2E+00	n
										Diphenyl Sulfone	127-63-9	5.1E+01	n	6.6E+02	n					1.5E+01	n	3.6E-02	n
										Diphenylamine	122-39-4	1.6E+03	n	2.1E+04	n					3.1E+02	n	5.8E-01	n
										Diphenylhydrazine, 1,2-	122-66-7	6.8E-01	c	2.9E+00	c	1.3E-02	c	5.6E-02	c	7.8E-02	c	2.5E-04	c
										Diquat	85-00-7	1.4E+02	n	1.8E+03	n					4.4E+01	n	2.0E+01	n
7.1E+00	C 1.4E-01	C 1.0E-01	C 1.0E-01	C 1.0E-01	C 1.0E-01	C 1.0E-01	I	0.1		Direct Black 38	1937-37-7	7.6E-02	c	3.2E-01	c</td								

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SFO (mg/kg-day) <sup>-1</sup>	k <sub>e</sub> y (ug/m <sup>3</sup> ) <sup>-1</sup>	IUR k <sub>e</sub> y (mg/kg-day)	RID <sub>c</sub> k <sub>e</sub> y (mg/m <sup>3</sup> ) <sup>-1</sup>	k <sub>e</sub> o muta- gen	GIABS	ABS	C <sub>sat</sub> (mg/kg)	Contaminant			Screening Levels												
								Analyte			CAS No.	Resident Soil (mg/kg) key	Industrial Soil (mg/kg) key	Resident Air (ug/m <sup>3</sup> ) key	Industrial Air (ug/m <sup>3</sup> ) key	Tapwater (ug/L) key	MCL (ug/L)	Risk-based SSL (mg/kg) key	MCL-based SSL (mg/kg)				
								Ethyl Methacrylate	97-63-2	1.8E+03	ns	7.6E+03	ns	3.1E+02	n	1.3E+03	n	6.3E+02	n	1.5E-01	n		
								Ethyl-p-nitrophenyl Phosphonate	2104-64-5	6.3E-01	n	8.2E+00	n					8.9E-02	n	2.8E-03	n		
1.1E-02	C 2.5E-06	C 1.0E-01	I 1.0E+00	I V	1	1	0.1	4.8E+02	100-41-4	5.8E+00	c	2.5E+01	c	1.1E+00	c	4.9E+00	c	1.5E+00	c	1.7E-03	c	7.8E-01	
								Ethylbenzene	109-78-4	4.4E+03	n	5.7E+04	n					1.4E+03	n	2.8E-01	n		
								Ethylene Cyanhydrin	107-15-3	7.0E+03	c	1.1E+05	nm					1.8E+03	n	4.1E-01	n		
								Ethylene Diamine															
								Ethylene Glycol	107-21-1	1.3E+05	nm	1.8E+06	nm	4.2E+02	n	1.8E+03	n	4.0E+04	n	8.1E+00	n		
								Ethylene Glycol Monobutyl Ether	111-76-2	6.3E+03	n	8.2E+04	n	1.7E+03	n	7.0E+03	n	2.0E+03	n	4.1E-01	n		
								Ethylene Oxide	75-21-8	1.8E-01	c	7.9E-01	c	3.2E-02	c	1.4E-01	c	5.1E-02	c	1.1E-05	c		
3.1E-01	C 8.8E-05	C 3.0E-02	C 1.0E-01	V	1	1	1.2E+05																
4.5E-02	C 1.3E-05	C 8.0E-05	I		1	1	0.1	Ethylene Thiourea	96-45-7	5.1E+00	n	5.1E+01	c**	2.2E-01	c	9.4E-01	c	1.6E+00	n	3.6E-04	n		
6.5E+01	C 1.9E-02	C 3.0E+00	I		1	1	1.5E+05	Ethyleneimine	151-56-4	2.7E-03	c	1.2E-02	c	1.5E-04	c	6.5E-04	c	2.4E-04	c	5.2E-08	c		
								Ethylbthalyl Ethyl Glycolate	84-72-0	1.9E+05	nm	2.5E+06	nm					5.8E+04	n	1.3E+02	n		
								Fenamiphos	22224-92-6	1.6E+01	n	2.1E+02	n					4.4E+00	n	4.3E-03	n		
								Fenpropidrin	39515-41-8	1.6E+03	n	2.1E+04	n					6.4E+01	n	2.9E+00	n		
								Fenvalerate	51630-58-1	1.6E+03	n	2.1E+04	n					5.0E+02	n	3.2E+02	n		
								Fluometuron	2164-17-2	8.2E+02	c	1.1E+04	n					2.4E+02	n	1.9E-01	n		
								Fluoride	16984-48-8	3.1E+03	n	4.7E+04	n	1.4E+01	n	5.7E+01	n	8.0E+00	n	1.2E+02	n		
								Fluorine (Soluble Fluoride)	7782-41-4	4.7E+03	n	7.0E+04	n	1.4E+01	n	5.7E+01	n	1.2E+03	n	1.8E+02	n	6.0E+02	
								Fluoridone	59756-60-4	5.1E+03	n	6.6E+04	n					1.4E+03	n	1.6E+02	n		
								Flurprimidol	56425-91-3	1.3E+03	n	1.6E+04	n					3.4E+02	n	1.6E+00	n		
								Flusilazole	85509-19-9	4.4E+01	n	5.7E+02	n					1.1E+01	n	1.8E+00	n		
								Flutolanil	66332-96-5	3.8E+03	n	4.9E+04	n					9.5E+02	n	5.0E+00	n		
								Fluvalinate	69409-94-5	6.3E+02	n	8.2E+03	n					2.0E+02	n	2.9E+02	n		
3.5E-03	I	1.0E-02	I 1.0E-01	I	1	1	0.1	Folpet	133-07-3	1.6E+02	c*	6.6E+02	c					2.0E+01	c*	4.7E-03	c*		
1.9E-01	I							Fomesafen	72178-02-0	2.9E+00	c	1.2E+01	c					3.9E-01	c	1.3E-03	c		
								Fonofos	944-22-9	1.3E+02	n	1.6E+03	n					2.4E+01	n	4.7E-02	n		
1.3E-05	I	2.0E-03	I 9.8E-03	A V	1	1	4.2E+04	Formaldehyde	50-00-0	1.7E+01	c*	7.3E+01	c*	2.2E-01	c*	9.4E-01	c*	4.3E-01	c*	8.7E-05	c*		
								Formic Acid	64-18-6	2.9E+01	n	1.2E+02	n	3.1E-01	n	1.3E+00	n	6.3E-01	n	1.3E-04	n		
								Fosetyl-AL	39148-24-8	1.9E+05	nm	2.5E+06	nm					6.0E+04	n	7.9E+02	n		
								-Dibenzofuran	132-64-9	7.3E+01	n	1.0E+03	n					7.9E+00	n	1.5E-01	n		
								-Furan	110-00-9	7.3E+01	n	1.0E+03	n					1.9E+01	n	7.3E-03	n		
								-Tetrahydrofuran	109-09-9	1.8E+04	n	9.4E+04	n	2.1E+03	n	8.8E+03	n	3.4E+03	n	7.5E-01	n		
3.8E+00	H							Furazolidone	87-45-1	1.4E-01	c	6.0E-01	c					2.0E-02	c	3.9E-05	c		
1.5E+00	C 4.3E-04	C 3.0E-03	I 5.0E-02	H V	1	1	1.0E+04	Furfural	99-01-1	2.1E+01	c	2.6E+03	n	5.2E+01	n	2.2E+02	n	3.8E+01	n	8.1E-03	n	6.8E-05	
3.0E-02	I 8.6E-06	C 4.0E-04	I		1	1	0.1	Furmecyclo	51-82-8	3.6E-01	c	1.5E+00	c	6.5E-03	c	2.9E-02	c	5.1E-02	c				
								Glufosinate, Ammonium	60068-00-0	1.8E+01	c	7.7E+01	c	3.3E-01	c	1.4E+00	c	1.1E+00	c	1.2E-03	c		
								Glutaraldehyde	77187-82-2	2.5E+01	c	3.3E+02	n					8.0E+00	n	1.8E-03	n		
								Glycidyl Glycosate	765-34-4	2.3E+01	n	2.1E+02	c	1.0E+00	n	4.4E+00	n	1.7E+00	n	3.3E-04	n		
								Guardinine	1071-83-6	6.3E+03	n	8.2E+04	n					2.0E+03	n	8.8E+00	n	3.1E+00	
								Guanidine Chloride	111-10-8	7.8E+02	n	1.2E+04	n					2.0E+02	n	4.5E-02	n		
								Haloxypip, Methyl	50-01-1	1.3E+03	n	1.6E+04	n					4.0E+02	n				
4.5E+00	I 1.3E-03	I 5.0E-04	I		1	1	0.1	Heptachlor	69906-40-2	3.2E+00	c	4.1E+01	n					7.6E-01	c	8.4E-03	n		
								Heptachlor Epoxide	76-14-8	1.3E-01	c	6.3E-01	c	2.2E-03	c	9.4E-03	c	1.4E-03	c	4.0E-01	c	3.3E-02	
9.1E+00	I 2.6E-03	I 1.3E-05	I	V	1	1	0.1	Heptachlorobenzene	1024-57-3	7.0E-02	c*	3.3E-01	c*	1.1E-03	c	4.7E-03	c	1.4E-03	c*	2.0E-01	c*	4.1E-03	
								Hexabromodiphenyl ether, 2,2',4,4',5,5'- (BDE-153)	87-82-1	1.6E-02	n	2.3E+03	n					4.0E+01	n	2.3E-01	n		
								Hexachlorobenzene	118-74-1	2.1E-01	c	9.6E-01	c	6.1E-03	c	2.7E-02	c	9.8E-03	c	1.0E+00	c	1.2E-04	
								Hexachlorobutadiene	87-68-3	1.2E+00	c*	5.3E+00	c	1.3E-01	c	5.6E-01	c	1.4E-01	c	2.7E-04	c*		
								Hexachlorocyclohexane, Alpha-	319-84-6	8.6E-02	c	3.6E-01	c	1.6E-03	c	6.8E-03	c	7.2E-03	c	4.2E-05	c		
								Hexachlorocyclohexane, Beta-	319-85-7	3.0E-01	c	1.3E+00	c	5.3E-03	c	2.3E-02	c	2.5E-02	c	1.5E-04	c		
								Hexachlorocyclohexane, Gamma- (Lindane)	58-89-9	5.7E-01	c*	2.5E+00	c	9.1E-03	c	4.0E-02	c*	4.0E+01	c	2.4E-04	c*	1.2E-03	
								Hexachlorocyclohexane, Technical	608-73-1	3.0E-01	c	1.3E+00	c	5.5E-03	c	2.4E-02	c	2.5E-02	c	1.5E-04	c		
								Hexachlorocyclopentadiene	77-47-4	1.8E+00	n	7.5E+00	n	2.1E-01	n	8.8E-01	n	4.1E-01	n	5.0E+01	n	1.3E-03	
4.0E-02	I 1.1E-05	I 3.0E-02	I V	1	1	0.1	Hexachloroethane	67-72-1	1.8E+00	c*	8.0E+00	c*	2.6E-01	c	1.1E+00	c	3.3E-01	c*	6.0E+00	n	2.0E-04	c*	8.0E+00
								Hexachlorophenone	70-30-4	1.9E+01	c	2.5E+02	n										
1.1E-01	I	3.0E-03	I		1	0.015		Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	121-82-4	6.1E+00	c*	2.8E+01	c					7.0E-01	c*	2.7E-04	c*		
								Hexamethylene Diisocyanate, 1,6-	822-06-0	3.1E+00	n	1.3E+01	n	1.0E-02	n	4.4E-02	n	2.1E-02	n	2.1E-04	n		
								Hexamethylphosphoramide	680-31-9	2.5E+01	n	3.3E+02	n					8.0E+00	n	1.8E-03	n		

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SFO (mg/kg-day) <sup>-1</sup>	k <sub>e</sub> y (ug/m <sup>3</sup> ) <sup>-1</sup>	IUR key	RID <sub>c</sub> (mg/kg-day)	k <sub>e</sub> y (mg/m <sup>3</sup> ) <sup>-1</sup>	RC <sub>c</sub> key	k <sub>e</sub> o (mg/m <sup>3</sup> ) <sup>-1</sup>	muta- gen	GIABS	ABS	C <sub>sat</sub> (mg/kg)	Contaminant			Screening Levels					Protection of Ground Water SSLs				
											Analyte			CAS No.	Resident Soil (mg/kg) key	Industrial Soil (mg/kg) key	Resident Air (ug/m <sup>3</sup> ) key	Industrial Air (ug/m <sup>3</sup> ) key	Tapwater (ug/L) key	MCL (ug/L)	Risk-based SSL (mg/kg) key	MCL-based SSL (mg/kg)	
7.0E-01	P	1		1			Iron				7439-89-6	5.5E+04	n	8.2E+05	nm		1.4E+04	n	3.5E+02	n			
9.5E-04	I			V	1		1.0E+04				78-83-1	2.3E+04	ns	3.5E+05	nm		5.9E+03	n	1.2E+00	n			
	3.0E-01	I		V	1		2.0E+00	C	1	0.1	Isobutyl Alcohol	5.7E+02	c*	2.4E+03	c	2.1E+03	n	8.8E+03	n	2.6E-02	c*		
	2.0E-01	I		V	1		1.5E-02				78-59-1	1.2E+03	n	1.8E+04	n		7.8E+01	c*	9.2E-01	n			
	2.0E-00	I		V	1		1.0E-01				33820-53-0						4.0E+01	n					
1.0E-01	P	2.0E-01	P	V	1		1.1E+05				67-63-0	5.6E+03	n	2.4E+04	n	2.1E+02	n	8.8E+02	n	8.4E-02	n		
	1.0E-01	I		V	1		5.0E-02				1832-54-8	6.3E-03	n	8.2E+04	n		2.0E+03	n	4.3E-01	n			
	1.0E-01	I		V	1		5.0E-02				82558-50-7	3.2E+03	n	4.1E+04	n		7.3E+02	n	2.0E+00	n			
	2.0E-03			V	1		3.0E-01	A			NA	4.3E+08	nm	1.8E+09	nm	3.1E+02	n	1.3E+03	n	1.2E+00	n		
2.0E-03	I			V	1		2.0E-03				77501-63-4	1.3E+02	n	1.6E+03	n		2.5E+01	n					
	5.0E-01	C	1.5E-01	C	2.0E-02	C	2.0E-04	C	M	0.025									c				
	8.5E-03	C	1.2E-05	C							7758-97-6	3.0E-01	c	6.2E+00	c	6.8E-06	c	8.2E-05	c	4.1E-02	c		
	8.5E-03	C	1.2E-05	C							7446-27-7	8.2E+01	c	3.8E+02	c	2.3E-01	c	1.0E+00	c	9.1E+00	c		
8.5E-03	C	1.2E-05	C								301-04-2	6.4E+01	c	2.7E+02	c	2.3E-01	c	1.0E+00	c	9.2E+00	c		
	1.0E-07	I		V	1		2.4E+00				7439-92-1	4.0E+02	L	8.0E+02	L	1.5E-01	L	1.5E+01	L	1.5E+01	L		
	5.0E-06	P		V	1		3.8E+02				1335-32-6	6.4E+01	c	2.7E+02	c	2.3E-01	c	1.0E+00	c	9.2E+00	c		
	2.0E-03	I		V	1		2.0E-03				78-00-2	7.8E-03	n	1.2E-01	n		1.3E-03	n	2.0E-03	c			
5.0E-04	I			V	1		1.0E-01				541-25-3	3.9E-01	n	5.8E+00	n		9.0E-02	n	3.8E-05	n			
	2.0E-03	I		V	1		2.0E-03				330-55-2	1.3E+02	n	1.6E+03	n		3.3E+01	n	2.9E-02	n			
	2.0E-03	P		V	1		2.0E-03				7439-93-2	1.6E+02	n	2.3E+03	n		4.0E+01	n	1.2E+01	n			
	5.0E-04	I		V	1		1.0E-01				94-74-6	3.2E+01	n	4.1E+02	n		7.5E+00	n	2.0E-03	n			
1.0E-02	I			V	1		1.0E-02				94-81-5	6.3E+02	c	8.2E+03	n		1.5E+02	c	5.8E-02	n			
	1.0E-02	I		V	1		1.0E-03				93-65-2	6.3E+01	c	8.2E+02	n		1.6E+01	n	4.7E-03	n			
	1.0E-02	I		V	1		1.0E-02				121-75-5	1.3E+03	n	1.6E+04	n		3.9E+02	n	1.0E-01	n			
	1.0E-01	I	7.0E-04	C	1		1.0E-01				108-31-6	6.3E+03	n	8.0E+04	n	7.3E-01	n	3.1E+00	n	3.8E-01	n		
5.0E-04	I			V	1		5.0E-04				123-33-1	3.2E+04	n	4.1E+05	nm		1.0E+04	n	2.1E+00	n			
	1.0E-04	P		V	1		1.0E-04				109-77-3	6.3E+00	n	8.2E+01	n				4.1E-04	n			
	3.0E-02	H		V	1		3.0E-02				8018-01-7	1.9E+03	n	2.5E+04	n				5.4E+02	n			
	5.0E-03	I		V	1		5.0E-03				12427-38-2	3.2E+02	n	4.1E+03	n				7.6E-01	n			
1.4E-01	I	5.0E-05	I	V	1		1.4E-01				7439-96-5								2.8E+01	n			
	2.4E-02	S	5.0E-05	I	0.04		2.4E-02				7439-96-5	1.8E+03	n	2.6E+04	n	5.2E-02	n	2.2E-01	n	2.6E-03	n		
	9.0E-05	H		V	1		9.0E-05				950-10-7	5.7E+00	n	7.4E+01	n				1.8E+00	n			
	3.0E-02	I		V	1		3.0E-02				24307-26-4	1.9E+03	n	2.5E+04	n				6.0E+02	n	2.0E-01	n	
3.0E-04	I	3.0E-04	S	0.07			3.0E-04				7439-94-7	2.3E+01	n	3.5E+02	n	3.1E-01	n	1.3E+00	n	2.0E+00	n		
	3.0E-04	I	V	1			3.1E+00				7439-97-6	1.1E+01	ns	4.6E+01	ns	3.1E-01	n	1.3E+00	n	2.0E+00	3.3E-02	n	
	1.0E-04	I		V	1		8.0E-05				22067-92-6	7.8E+00	n	1.2E+02	n				2.0E+00	n	5.0E-04	n	
	8.0E-05	I		V	1		8.0E-05				62-39-4	5.1E+00	n	6.6E+01	n								
3.0E-05	I			V	1		3.0E-05				150-50-5	2.3E+00	n	3.5E+01	n				6.0E-01	n	5.9E-02	n	
	3.0E-05	I		V	1		3.0E-05				78-48-8	1.9E+00	n	2.5E+01	n				8.5E-02	n	4.2E-04	n	
	6.0E-02	I		V	1		6.0E-02				57937-19-1	3.8E+03	n	4.9E+04	n				1.2E+03	n	3.3E-01	n	
	1.0E-04	I	3.0E-02	P	V	1		4.6E+03				126-18-7	7.5E+00	n	1.0E+02	n	3.1E+01	n	1.3E+02	n	4.3E-04	n	
5.0E-04	I			V	1		5.0E-04				10203-92-6	3.2E+00	n	4.1E+01	n				6.0E-01	n	2.1E-04	n	
	5.0E-05	I		V	1		5.0E-05				67-56-1	1.2E+06	nm	2.1E+06	nm	2.1E+04	n	2.0E+04	n	4.1E+00	n		
	2.0E-00	I	2.0E+01	I	V	1		1.1E+05				990-37-8	6.3E+01	n	8.2E+02	n				1.9E+01	n	4.7E-03	n
	2.5E-02	I		V	1		2.5E-02				16752-77-5	1.6E+03	n	2.1E+04	n				5.0E+02	n	1.1E-01	n	
4.9E-02	C	1.4E-05	C				4.9E-03				99-59-2	1.1E+01	c	4.7E+01	c	2.0E-01	c	8.8E-01	c	5.3E-04	c		
	5.0E-03	I		V	1		5.0E-03				72-43-5	3.2E+02	n	4.1E+03	n				3.7E+01	n	4.0E+01	n	
	8.0E-03	P	1.0E-02	P	V	1		1.2E+05				110-49-6	1.1E+02	n	5.1E+02	n	1.0E+00	n	4.4E+00	n	4.2E-04	n	
	5.0E-03	P	2.0E-02	I	V	1		1.1E+05				109-86-4	3.3E+02	n	3.5E+03	n	2.1E+01	n	8.8E+01	n	5.9E-03	n	
1.0E-00	X			V	1		2.9E+04				79-20-9	7.8E+04	ns	1.2E+06	nm				2.0E+04	n	4.1E+00	n	
	2.0E-02	P		V	1		6.8E-03				96-33-3	1.5E+02	n	6.1E+02	n	2.1E+01	n	8.8E+01	n	8.9E-03	n		
	6.0E-01	I	5.0E+00	I	V	1		2.8E+04				78-93-3	2.7E+04	n	1.9E+05	nms	5.2E+03	n	2.2E+04	n	1.2E+00	n	
	1.0E-03	X	1.0E-03	P	V	1		1.8E+05				60-34-4	1.4E-01	c**	6.2E-01	c**	2.8E-03	c**	1.2E-02	c**	5.6E-03	c**	
1.0E-03	X	1.0E-03	P	V	1		3.0E+05				108-10-1	3.3E+04	n	4.1E+05	nms	3.1E+03	n	1.3E+04	n	6.3E+03	n		
	3.0E+00	I	1	V	1		3.4E+03				624-83-9	4.6E+00	n	1.9E+01	n	1.0E+00	n	4.4E+00	n	2.1E+00	n		
	1.0E-03	C	V	1			1.0E+04				80-62-6	4.4E+03	n	1.9E+04	ns	7.3E+02	n	3.1E+03	n	3.0E-01	n		
	1.4E+00	I	7.0E-01	I	V	1		2.4E+03				298-00-0	1.6E+01	n	2.1E								

Key: I = IRIS; P = PPRTV; A = ATSDR; C = Cal EPA; X = APPENDIX PPRTV SCREEN (See FAQ #27); H = HEAST; F = See FAQ; J = New Jersey; O = EPA Office of Water; E = see user guide Section 2.3.5; L = see user guide on lead; M = mutagen; S = see user guide Section 5; V = volatile; R = RBA applied (See User Guide for Arsenic notice); c = cancer; n = noncancer; * = where: n SL < 100X c SL; ** = where n SL < 10X c SL; SSL values are based on DAF=1; m = Concentration may exceed ceiling limit (See User Guide); s = Concentration may exceed Csat (See User Guide)																								
SFO (mg/kg-day) <sup>-1</sup>	k <sub>e</sub> y (ug/m <sup>3</sup> ) <sup>-1</sup>	IUR k <sub>e</sub> y (ug/m <sup>3</sup> ) <sup>-1</sup>	RID <sub>c</sub> y (ug/m <sup>3</sup> ) <sup>-1</sup>	k <sub>e</sub> RC <sub>c</sub> y (mg/m <sup>3</sup> ) <sup>-1</sup>	k <sub>e</sub> vo l muta- gen	GIABS	ABS	C <sub>sat</sub> (mg/kg)	Contaminant			Screening Levels					Protection of Ground Water SSLs							
									Analyte			CAS No.	Resident Soil (mg/kg) key	Industrial Soil (mg/kg) key	Resident Air (ug/m <sup>3</sup> ) key	Industrial Air (ug/m <sup>3</sup> ) key	Tapwater (ug/L) key	MCL (ug/L)	Risk-based SSL (mg/kg) key	MCL-based SSL (mg/kg)				
									Metribuzin	21087-64-9	1.6E+03	n	2.1E+04	n			4.9E+02	n	1.5E-01	n				
									Metsulfuron-methyl	74223-64-6	1.6E+04	n	2.1E+05	nm			4.9E+03	n	1.9E+00	n				
									Mineral oils	8012-95-1	2.3E+05	nm	3.5E+06	nm			6.0E+03	n	2.4E+03	n				
1.8E+01	C	5.1E-03	C	2.0E-04	I	V	1	0.1	Mirex	2385-85-5	3.6E-02	c	1.7E-01	c	5.5E-04	c	2.4E-03	c	8.8E-04	c	6.3E-04	c		
									Molinate	2212-67-1	1.3E+02	n	1.6E+03	n			3.0E+01	n	1.7E-02	n				
									Molybdenum	7439-98-7	3.9E+02	n	5.8E+03	n			1.0E+02	n	2.0E+00	n				
									Monochloramine	10599-90-3	7.8E+03	n	1.2E+05	nm			2.0E+03	n	4.0E+03	n				
									Monomethylamine	100-61-8	1.3E+02	n	1.6E+03	n			3.8E+01	n	1.4E-02	n				
									Myclobutanil	88671-89-0	1.6E+03	n	2.1E+04	n			4.5E+02	n	5.6E+00	n				
									N,N-Diphenyl-1,4-benzenediamine	74-31-7	1.9E+01	n	2.5E+02	n			3.6E+00	n	3.7E-01	n				
									Naled	300-76-5	1.6E+02	n	2.3E+03	n			4.0E+01	n	1.8E-02	n				
									Naphtha, High Flash Aromatic (HFAN)	64742-95-6	2.3E+03	n	3.5E+04	n	1.0E+02	n	4.4E+02	n	1.5E+02	n				
1.8E+00	C	0.0E+00	C	1.0E-01	I		1	0.1	Naphthalimide, 2-	91-59-8	3.0E-01	c	1.3E+00	c			3.9E-02	c	2.0E-04	c				
									Napropamide	15299-99-7	6.3E+03	n	8.2E+04	n			1.6E+03	n	1.1E+01	n				
									Nickel Acetate	373-02-4	6.7E+02	n	8.1E+03	n	1.1E-02	c**	4.7E-02	c**	2.2E+00	n	4.5E-02	n		
									Nickel Carbonate	3333-67-3	6.7E+02	n	8.1E+03	n	1.1E-02	c**	4.7E-02	c**	2.2E+00	n				
									Nickel Carbonyl	13463-39-3	8.2E+02	n	1.1E+04	n	1.1E-02	c**	4.7E-02	c**	2.2E-02	c**		c**		
									Nickel Hydroxide	12054-48-7	8.2E+02	n	1.1E+04	n	1.1E-02	c**	4.7E-02	c**	2.0E+02	n				
									Nickel Oxide	1313-99-1	8.4E+02	n	1.2E+04	n	1.1E-02	c**	4.7E-02	c**	2.0E+02	n				
									Nickel Refinery Dust	NA	8.2E+02	n	1.1E+04	n	1.2E-02	c**	5.1E-02	c**	2.2E+02	n	3.2E+01	n		
									Nickel Soluble Salts	7440-02-0	1.5E+03	n	2.2E+04	n	1.1E-02	c**	4.7E-02	c**	3.9E+02	n	2.6E+01	n		
1.7E+00	C	4.8E-04	I	1.1E-02	C	1.4E-05	C	0.04	Nickel Sulfide	12035-72-2	4.1E-01	c	1.9E+00	c	5.8E-03	c**	2.6E-02	c**	4.5E-02	c				
									Nickelocene	1271-28-9	6.7E+02	n	8.1E+03	n	1.1E-02	c**	4.7E-02	c**	2.2E+02	c				
									Nitro	14797-55-8	1.3E+05	nm	1.9E+06	nm			3.2E+04	n	1.0E+04	n				
									Nitrate + Nitrite (as N)	NA							1.0E+04	n	1.0E+03	n				
									Nitrite	14797-65-0	7.8E+03	n	1.2E+05	nm			2.0E+03	n	8.0E-02	n				
									Nitroariline, 2-	88-74-4	6.3E+02	n	8.0E+03	n	5.2E-02	n	2.2E-01	n	1.9E+02	n				
2.0E-02	P	4.0E-03	P	6.0E-03	P	1	0.1		Nitroariline, 4-	100-01-6	2.7E+01	c**	1.1E+02	c*	6.3E+00	n	2.6E+01	n	3.8E+00	c*	1.6E-03	c*		
4.0E-05	I	2.0E-03	I	9.0E-03	I	V	1	0.1	Nitrobenzene	98-95-3	5.1E+00	c*	2.2E+01	c*	7.0E-02	c	3.1E-01	c	1.4E-01	c*	9.2E-05	c*		
									Nitrocellulose	9004-70-0	1.9E+08	nm	2.5E+09	nm			6.0E+07	n	1.3E+04	n				
									Nitrofurantoin	67-20-9	4.4E+03	c	5.7E+04	n			1.4E+03	n	6.1E-01	n				
									Nitrofurazone	59-97-0	4.2E-01	c	1.8E+00	c	7.6E-03	c	3.3E-02	c	6.0E-02	c	5.4E-05	c		
									Nitroglycerin	55-63-0	6.3E+00	n	8.2E+01	n			2.0E+00	n	8.5E-04	n				
									Nitroguanidine	566-38-7	6.3E+03	n	8.2E+04	n			2.0E+03	n	4.8E-01	n				
									Nitromethane	50.5E-03	5.4E+00	c*	2.4E+01	c*	3.2E-01	c*	1.4E+00	c*	6.4E-01	c*	1.4E-04	c*		
									Nitropropane, 2-	7.0E-03	1.4E+02	c	6.0E-02	c	1.0E-03	c	4.5E-03	c	2.1E-03	c	5.4E-07	c		
2.7E+01	C	7.7E-03	C	M	1	0.1			Nitroso-N-ethylurea, N-	75-73-9	4.5E-03	c	8.5E-02	c	1.3E-04	c	1.6E-03	c	9.2E-04	c	2.2E-07	c		
1.2E+02	C	3.4E-02	C	M	1	0.1			Nitroso-N-methylurea, N-	684-93-5	1.0E-03	c	1.9E-02	c	3.0E-05	c	3.6E-04	c	2.1E-04	c	4.6E-08	c		
5.4E+00	I	1.6E-03	I	V	1	0.1			Nitroso-di-N-butylamine, N-	924-16-3	9.9E-02	c	4.6E-01	c	1.8E-03	c	7.7E-03	c	2.7E-03	c	5.5E-06	c		
7.0E+00	I	2.0E-03	C	1	0.1				Nitroso-di-N-propylamine, N-	621-64-7	7.8E-02	c	3.3E-01	c	1.4E-03	c	6.1E-03	c	1.1E-02	c	8.1E-06	c		
2.8E+00	I	8.0E-04	C	1	0.1				Nitrosodiethanolamine, N-	111-64-7	1.9E-01	c	8.2E-01	c	3.5E-03	c	1.5E-02	c	2.8E-02	c	5.6E-06	c		
1.5E+02	I	4.3E-02	I	M	1	0.1			Nitrosodiethylamine, N-	55-18-5	8.1E-04	c	1.5E-02	c	2.4E-05	c	2.9E-04	c	1.7E-04	c	6.1E-08	c		
5.1E+01	I	1.4E-02	I	8.0E-06	P	4.0E-05	X	V	Nitrosodimethylamine, N-	62-75-9	2.0E-03	c	3.4E-02	c	7.2E-05	c	8.8E-04	c	1.1E-04	c	2.7E-08	c		
4.9E-03	I	2.6E-06	C	V	1	0.1			Nitrosodiphenylamine, N-	98-30-6	1.1E+02	c	4.7E-02	c	1.1E+00	c	4.7E+00	c	1.2E+01	c	6.7E-02	c		
2.2E+01	I	6.3E-03	C	V	1	0.1			Nitrosomethylamine, N-	105-95-6	2.0E-02	c	9.1E-02	c	4.5E-04	c	1.9E-03	c	7.1E-04	c	2.0E-07	c		
6.7E+00	C	1.9E-03	C	1	0.1				Nitrosopholine [N-]	58-89-2	8.1E-02	c	3.4E-01	c	1.5E-03	c	6.5E-03	c	1.2E-02	c	2.8E-06	c		
9.4E+00	C	2.7E-03	C	1	0.1				Nitrosopiperidine [N-]	100-75-4	5.8E-02	c	2.4E-01	c	1.0E-03	c	4.5E-03	c	8.2E-03	c	4.4E-06	c		
2.1E+00	I	6.1E-04	I	1	0.1				Nitrosopyrrolidine, N-	930-55-2	2.6E-01	c	1.1E-00	c	4.6E-03	c	2.0E-02	c	3.7E-02	c	1.4E-05	c		
1.0E+01	P	1.0E-04	X	1	0.1				Nitrotoluene, m-	99-08-1	6.3E+00	n	8.2E+01	n			1.7E+00	n	1.6E-03	n				
2.2E-01	P	9.0E-04	P	V	1	0.1	1.5E+03		Nitrotoluene, o-	88-72-2	3.2E+00	c*	1.5E+01	c*			3.1E-01	c*	3.0E-04	c*	4.0E-03	c*		
1.6E-02	P	4.0E-03	P	1	0.1				Nitrotoluene, p-	99-99-0	3.4E+00	c*	1.4E+02	c*			4.3E+00	c*						
									Nonane, n-	111-84-2	1.1E+01	ns	7.2E+01	ns	2.1E+01	n	8.8E+01	n	5.3E+00	n	7.5E-02	n		
									Norflurazon	27314-13-2	2.5E+03	n	3.3E+04	n			7.7E+02	n	5.0E+00	n				
									Octabromo-1,3,5,7-tetrabromo-1,3,5,7-tetrazocine (HMX)	2691-41-0	3.9E+03	n	5.7E+04	n			1.0E+03	n	1.3E+00	n	1.3E+00	n		
									Oxamyl	152-16-9	1.3E+02	n	1.6E+03	n			4.0E+01	n	9.6E-03	n				
									Oxyfluorfen	1904-88-3	3.2E+03	n	4.1E+04	n			8.1E+02	n	1.5E+00	n				

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SFO (mg/kg-day) <sup>-1</sup>	k <sub>e</sub> (ug/m <sup>3</sup> ) <sup>-1</sup>	IUR (ug/m <sup>3</sup> ) <sup>-1</sup>	k <sub>e</sub> RID <sub>c</sub> (ug/m <sup>3</sup> ) <sup>-1</sup>	k <sub>e</sub> RIC <sub>c</sub> (mg/m <sup>3</sup> ) <sup>-1</sup>	k <sub>e</sub> vo l muta- gen	GIABS	ABS	C <sub>cat</sub> (mg/kg)	Contaminant			Analyte	CAS No.	Resident Soil (mg/kg) key	Industrial Soil (mg/kg) key	Resident Air (ug/m <sup>3</sup> ) key	Industrial Air (ug/m <sup>3</sup> ) key	Tapwater (ug/L) key	MCL (ug/L)	Risk-based SSL (mg/kg) key	MCL-based SSL (mg/kg)
														Resident Soil (mg/kg) key	Industrial Soil (mg/kg) key	Resident Air (ug/m <sup>3</sup> ) key	Industrial Air (ug/m <sup>3</sup> ) key	Tapwater (ug/L) key	MCL (ug/L)	Risk-based SSL (mg/kg) key	MCL-based SSL (mg/kg)
	7.0E-04	I		1					-Perchlorate and Perchlorate Salts	14797-73-0	5.5E+01	n	8.2E+02	n		1.4E+01	n	1.5E+01(F)		n	
	7.0E-04	I		1					-Potassium Perchlorate	7778-74-7	5.5E+01	n	8.2E+02	n		1.4E+01	n				
	7.0E-04	I		1					-Sodium Perchlorate	7601-89-0	5.5E+01	n	8.2E+02	n		1.4E+01	n				
	2.0E-02	P	V	1					Perfluorobutane Sulfonate	375-73-5	1.6E+03	n	2.3E+04	n		3.8E+02	n		2.1E-01	n	
	5.0E-02	I		1	0.1				Permethrin	52645-53-1	3.2E+03	n	4.1E+04	n		1.0E+03	n		2.4E+02	n	
2.2E-03	C	6.3E-07	C	1	0.1				Phenacetin	62-44-2	2.5E+02	c	1.0E+03	c	4.5E+00	c	1.9E+01	c		9.7E-03	c
	2.5E-01	I		1	0.1				Phenmedipham	13684-63-4	1.6E+04	n	2.1E+05	nm		4.0E+03	n		2.1E+01	n	
	3.0E-01	I	2.0E-01	C	1	0.1			Phenol	108-95-2	1.9E+04	n	2.5E+05	c	2.1E+02	n	8.8E+02	n		3.3E+00	n
	4.0E-03	I		1	0.1				Phenol, 2-(1-methylethoxy)-, methylcarbamate	114-26-1	2.5E+02	n	3.3E+03	n						2.5E-02	n
	5.0E-04	X		1	0.1				Phenothiazine	92-84-2	3.2E+01	n	4.1E+02	n		4.3E+00	n		1.4E-02	n	
	6.0E-03	I		1	0.1				Phenylenediamine, m-	108-45-2	3.8E+02	n	4.9E+03	n		1.2E+02	n		3.2E-02	n	
4.7E-02	H			1	0.1				Phenylenediamine, o-	95-54-5	1.2E+01	c	4.9E+01	c		1.6E+00	c		4.4E-04	c	
1.9E-03	H			1.9E-01	H				Phenylenediamine, p-	106-50-3	1.2E+04	n	1.6E+05	nm		3.8E+03	n		1.0E+00	n	
				1	0.1				Phenylphenol, 2-	90-43-7	2.8E+02	c	1.2E+03	c		3.0E+01	c		4.1E-01	c	
	2.0E-04	H		2.0E-04	I	V		1	Phorate	298-02-2	1.3E+01	n	1.6E+02	n						3.4E-03	n
				1.6E+03				1	Phosgene	75-44-5	3.1E-01	n	1.3E+00	n	3.1E-01	n	1.3E+00	n			
				2.0E-02	I				Phosmet	732-11-6	1.3E+03	n	1.6E+04	n				3.7E+02	n	8.2E-02	n
	4.9E+01	P		1					Phosphates, Inorganic	13776-88-0	3.8E+06	nm	5.7E+07	nm		9.7E+05	n				
	4.9E+01	P		1					-Aluminum metaphosphate	68333-79-9	3.8E+06	nm	5.7E+07	nm		9.7E+05	n				
									-Ammonium polyphosphate												
	4.9E+01	P		1					-Calcium pyrophosphate	7790-76-3	3.8E+06	nm	5.7E+07	nm		9.7E+05	n				
	4.9E+01	P		1					-Diammonium phosphate	7783-28-0	3.8E+06	nm	5.7E+07	nm		9.7E+05	n				
	4.9E+01	P		1					-Dicalcium phosphate	7757-93-9	3.8E+06	nm	5.7E+07	nm		9.7E+05	n				
	4.9E+01	P		1					-Dimagnesium phosphate	7782-75-4	3.8E+06	nm	5.7E+07	nm		9.7E+05	n				
	4.9E+01	P		1					-Dipotassium phosphate	7758-11-4	3.8E+06	nm	5.7E+07	nm		9.7E+05	n				
	4.9E+01	P		1					-Disodium phosphate	7558-79-4	3.8E+06	nm	5.7E+07	nm		9.7E+05	n				
	4.9E+01	P		1					-Monoaluminum phosphate	13530-50-2	3.8E+06	nm	5.7E+07	nm		9.7E+05	n				
	4.9E+01	P		1					-Monoammonium phosphate	7722-76-1	3.8E+06	nm	5.7E+07	nm		9.7E+05	n				
	4.9E+01	P		1					-Monocalcium phosphate	7758-23-8	3.8E+06	nm	5.7E+07	nm		9.7E+05	n				
	4.9E+01	P		1					-Monomagnesium phosphate	7757-86-0	3.8E+06	nm	5.7E+07	nm		9.7E+05	n				
	4.9E+01	P		1					-Monopotassium phosphate	7778-77-0	3.8E+06	nm	5.7E+07	nm		9.7E+05	n				
	4.9E+01	P		1					-Monosodium phosphate	7558-80-7	3.8E+06	nm	5.7E+07	nm		9.7E+05	n				
	4.9E+01	P		1					-Polyphosphoric acid	30117-19-1	3.8E+06	nm	5.7E+07	nm		9.7E+05	n				
	4.9E+01	P		1					-Potassium tripolyphosphate	15845-36-6	3.8E+06	nm	5.7E+07	nm		9.7E+05	n				
	4.9E+01	P		1					-Sodium acid pyrophosphate	7756-16-9	3.8E+06	nm	5.7E+07	nm		9.7E+05	n				
	4.9E+01	P		1					-Sodium aluminum phosphate (acidic)	7785-88-1	3.8E+06	nm	5.7E+07	nm		9.7E+05	n				
	4.9E+01	P		1					-Sodium aluminum phosphate (anhydrous)	10279-55-1	3.8E+06	nm	5.7E+07	nm		9.7E+05	n				
	4.9E+01	P		1					-Sodium aluminum phosphate (tetrahydrate)	10325-78-7	3.8E+06	nm	5.7E+07	nm		9.7E+05	n				
	4.9E+01	P		1					-Sodium hexametaphosphate	10124-56-8	3.8E+06	nm	5.7E+07	nm		9.7E+05	n				
	4.9E+01	P		1					-Sodium polyphosphate	68915-31-1	3.8E+06	nm	5.7E+07	nm		9.7E+05	n				
	4.9E+01	P		1					-Sodium trimetaphosphate	7785-14-4	3.8E+06	nm	5.7E+07	nm		9.7E+05	n				
	4.9E+01	P		1					-Sodium tripolyphosphate	7758-24-4	3.8E+06	nm	5.7E+07	nm		9.7E+05	n				
	4.9E+01	P		1					-Tetrapotassium phosphate	7320-14-5	3.8E+06	nm	5.7E+07	nm		9.7E+05	n				
	4.9E+01	P		1					-Tetrasodium pyrophosphate	7722-08-5	3.8E+06	nm	5.7E+07	nm		9.7E+05	n				
	4.9E+01	P		1					-Triallyluminum sodium tetra dehydrogeno laurophosphate (dilhydrate)	15136-87-5	3.8E+06	nm	5.7E+07	nm		9.7E+05	n				
	4.9E+01	P		1					-Tricalcium phosphate	7758-17-4	3.8E+06	nm	5.7E+07	nm		9.7E+05	n				
	4.9E+01	P		1					-Trimagnesium phosphate	7757-87-1	3.8E+06	nm	5.7E+07	nm		9.7E+05	n				
	4.9E+01	P		1					-Tripotassium phosphate	7778-53-2	3.8E+06	nm	5.7E+07	nm		9.7E+05	n				
	4.9E+01	P		1					-Trisodium phosphate	7601-54-9	3.8E+06	nm	5.7E+07	nm		9.7E+05	n				
	3.0E-04	I	3.0E-04	I	V	1	1	1	Phosphine	7803-51-2	2.3E+01	n	3.5E+02	n	3.1E-01	n	1.3E+00	n	5.7E-01	n	
	4.9E+01	P	1.0E-02	I	V	1	1	1	Phosphoric Acid	7664-38-2	3.0E+06	nm	2.9E+07	nm	1.0E+01	n	4.4E+01	n	9.7E+05	n	
	2.0E-05	I	V	1	1				Phosphorus, White	7723-14-0	1.6E+00	n	2.3E+01	n		4.0E-01	n		1.5E-03	n	
	1.4E-02	I	2.4E-06	C	2.0E-02	I	1	0.1	-Bis(2-ethylhexyl)phthalate	117-81-7	3.9E+01	c*	1.6E+02	c	1.2E+00	c	5.1E+00	c*	6.0E+00	1.3E+00	c*
	1.9E-03	P		2.0E-01	I	1	0.1		-Butyl Benzyl Phthalate	85-68-7	2.9E+02	c*	1.2E+03	c	1.6E+01	c	1.3E+04	n		2.4E-01	c
			1.0E+00	I					-Butylphthalylglycolate	85-70-1	6.3E+04	n	8.2E+05	nm					3.1E+02	n	
	1.0E-01	I		1	0.1				-Dibutyl Phthalate	84-74-2	6.3E+03	n	8.2E+04	n					2.3E+00	n	
	8.0E-01	I		1	0.1				-Diethyl Phthalate	84-66-2	5.1E+04	n	6.6E+05	nm					6.1E+00	n	
	1.0E-01	I	V	1	0.1				-Dimethylterephthalate	120-61-6	7.8E+03	n	1.2E+05	nm					4.9E-01	n	
	1.0E-02	P		1	0.1				-Octyl Phthalate, di-N-	117-84-0	6.3E+02	n	8.2E+03	n					5.7E+01	n	
	1.0E+00	H		1	0.1				-Phthalic Acid, P-	100-21-0	6.3E+04	n	8.2E+05	nm					6.8E+00	n	
	2.0E+00	S	2.0E-02	C	1	0.1			-Phthalic Anhydride	85-44-9	1.3E+05	n	1.6E+06	nm	2.1E+01	n	8.9E+04	n		8.5E+00	n
	7.0E-02	S	2.0E-05	S	7.0E-05	I	V	1	0.14	Picloram	1918-02-1	4.4E+03	n	5.7E+							

Regional Screening Level (RSL) Summary Table (TR=1E-06, HQ=1) May 2016

Key: I = IRIS; P = PPRTV; A = ATSDR; C = Call EPA; X = APPENDIX PPRTV SCREEN (See FAQ #27); H = HEAST; F = See FAQ; J = New Jersey; O = EPA Office of Water; U = see user guide Section 2.3.5; L = use user guide on lead; M = mutagen; S = see user guide Section 5; V = volatile; R = RBA applied (See User Guide for details); C = cancer; n = nonscancer;  $\leq$  = where  $n \leq 100$ ;  $\leqslant$  = where  $n \leq 10$ ; SSL values are based on DDF=1; m = Concentration may exceed ceiling limit (see User Guide); s = Concentration may exceed ceiling limit (see User Guide).

Toxicity and Chemical-specific Information										Contaminant										Screening Levels								
SFO (mg/kg-day) <sup>-1</sup>	K <sub>e</sub> (ug/m <sup>3</sup> )	IUR (kg/day)	RfD <sub>o</sub> (mg/kg-day)	K <sub>e</sub> (mg/m <sup>3</sup> )	RIC, K <sub>e</sub> (mg/m <sup>3</sup> )	K <sub>v</sub> mutagen	GIABS	ABS	C <sub>sat</sub> (mg/kg)	Analyte										MCL (ug/L)	Risk-based SSL (mg/kg) key	MCL-based SSL (mg/kg)						
3.9E+00	E 1.1E-03	E 2.3E-05	E 1.3E-03	E V	1	0.14	-Heptachlorobiphenyl, 2,3,3',4,4',5,5'-(PCB 189)	39635-31-9	1.3E-01	c*	5.2E-01	c*	2.5E-03	c	1.1E-02	c	4.0E-03	c	2.8E-03	c								
3.9E+00	E 1.1E-03	E 2.3E-05	E 1.3E-03	E V	1	0.14	-Hexachlorobiphenyl, 2,3,4',4,5,5'-(PCB 167)	52663-72-6	1.2E-01	c*	5.1E-01	c*	2.5E-03	c	1.1E-02	c	4.0E-03	c	1.7E-03	c								
3.9E+00	E 1.1E-03	E 2.3E-05	E 1.3E-03	E V	1	0.14	-Hexachlorobiphenyl, 2,3,3',4,4',5-(PCB 157)	69782-90-7	1.2E-01	c*	5.0E-01	c*	2.5E-03	c	1.1E-02	c	4.0E-03	c	1.7E-03	c								
3.9E+00	E 1.1E-03	E 2.3E-05	E 1.3E-03	E V	1	0.14	-Hexachlorobiphenyl, 2,3,3',4,4',5-(PCB 156)	38380-08-4	1.2E-01	c*	5.0E-01	c*	2.5E-03	c	1.1E-02	c	4.0E-03	c	1.7E-03	c								
3.9E+03	E 1.1E-06	E 2.3E-08	E 1.3E-06	E V	1	0.14	-Hexachlorobiphenyl, 3,3',4,4',5,5'-(PCB 169)	32774-16-6	1.2E-04	c*	5.1E-04	c*	2.5E-06	c	1.1E-05	c	4.0E-06	c	1.7E-06	c								
3.9E+00	E 1.1E-03	E 2.3E-05	E 1.3E-03	E V	1	0.14	-Pentachlorobiphenyl, 2,3,4,4',5-(PCB 123)	65510-44-3	1.2E-01	c*	4.9E-01	c*	2.5E-03	c	1.1E-02	c	4.0E-03	c	1.0E-03	c								
3.9E+00	E 1.1E-03	E 2.3E-05	E 1.3E-03	E V	1	0.14	-Pentachlorobiphenyl, 2,3,3',4,4',5-(PCB 118)	31508-00-6	1.2E-01	c*	4.9E-01	c*	2.5E-03	c	1.1E-02	c	4.0E-03	c	1.0E-03	c								
3.9E+00	E 1.1E-03	E 2.3E-05	E 1.3E-03	E V	1	0.14	-Pentachlorobiphenyl, 2,3,3',4,4',5-(PCB 105)	32598-14-4	1.2E-01	c*	4.9E-01	c*	2.5E-03	c	1.1E-02	c	4.0E-03	c	1.0E-03	c								
3.9E+00	E 1.1E-03	E 2.3E-05	E 1.3E-03	E V	1	0.14	-Pentachlorobiphenyl, 2,3,4,4',5-(PCB 114)	74472-37-0	1.2E-01	c*	5.0E-01	c*	2.5E-03	c	1.1E-02	c	4.0E-03	c	1.0E-03	c								
1.3E+04	E 3.8E-00	E 7.0E-09	E 4.0E-07	E V	1	0.14	-Pentachlorobiphenyl, 2,3,3',4,4',5-(PCB 126)	57465-28-8	3.6E-05	c	1.5E-04	c	7.4E-07	c	3.2E-06	c	1.2E-06	c	3.0E-07	c								
2.0E+00	I 5.7E-04	I V	1	0.14	Polychlorinated Biphenyls (high risk)										1336-36-3	2.3E-01	c	9.4E-01	c	2.1E-02	c	6.8E-03	c					
4.0E-01	I 1.0E-04	I V	1	0.14	Polychlorinated Biphenyls (low risk)										1336-36-3	1.4E-01	c	1.2E-01	c	4.4E-02	c	5.0E-01	7.8E-02					
7.0E-02	I 2.0E-05	I V	1	0.14	Polychlorinated Biphenyls (lowest risk)										1336-36-3													
1.3E+01	E 3.8E-03	E 7.0E-06	E 4.0E-04	E V	1	0.14	-Tetrachlorobiphenyl, 3,3',4,4'- (PCB 77)	32598-13-3	3.8E-02	c*	1.6E-01	c*	7.4E-04	c	3.2E-03	c	6.0E-03	c*	9.4E-04	c*								
3.9E+01	E 1.1E-02	E 2.3E-06	E 1.3E-04	E V	1	0.14	-Tetrachlorobiphenyl, 3,4,4',5- (PCB 81)	70362-50-4	1.2E-02	c*	4.8E-02	c*	2.5E-04	c	1.1E-03	c	4.0E-04	c	6.2E-05	c								
					6.0E-04	I	1	0.1	Polymeric Methylene Diphenyl Diisocyanate (PMDI)										9016-87-9	8.5E+05	nm	3.6E+06	nm	6.3E-01	n	2.6E+00	n	
					6.0E-02	I	V	1	0.13	Polynuclear Aromatic Hydrocarbons (PAHs)										83-32-9	3.6E+03	n	4.5E+04	n	5.3E+02	n	5.5E+00	n
					3.0E-01	I	V	1	0.13	-Acenaphthene										120-12-7	1.8E+04	c	2.3E+05	nm	1.8E+03	n	5.8E+01	n
7.3E-01	E 1.1E-04	C V	M	1	0.13	-Benz[a]anthracene	56-55-3	1.6E-01	c	2.9E+00	c	9.2E-03	c	1.1E-01	c	1.2E-02	c	2.0E-01		4.2E-03	c							
1.2E+00	C 1.1E-04	C	1	0.13	-Benz[j]fluoranthene	205-82-3	4.2E-01	c	1.8E+00	c	2.6E-02	c	1.1E-01	c	6.5E-02	c	7.8E-02	c	4.0E-03	c	4.0E-03	c						
7.3E+00	I 1.1E-03	C M	1	0.13	-Benz[a]pyrene	50-32-8	1.6E-02	c	2.9E-01	c	9.2E-04	c	1.1E-02	c	3.4E-03	c	2.0E-01		2.4E-01									
7.3E-01	E 1.1E-04	C M	1	0.13	-Benz[b]fluoranthene	205-99-2	1.6E-01	c	2.9E+00	c	9.2E-03	c	1.1E-01	c	3.4E-02	c	4.1E-02	c	4.0E-01	c								
7.3E-02	E 1.1E-04	C 8.0E-02	I V	1	0.13	-Benz[k]fluoranthene	207-08-9	1.6E+00	c	2.9E+01	c	9.2E-03	c	1.1E-01	c	3.4E-01	c	3.9E+00		3.9E+00	n							
7.3E-03	E 1.1E-05	C M	1	0.13	-Chrysene	218-01-9	1.6E+01	c	2.9E+02	c	9.2E-02	c	1.1E+00	c	3.4E+00	c	1.2E+00	c	1.2E+00	c								
7.3E+00	E 1.2E-03	C M	1	0.13	-Dibenz[a,h]anthracene	53-70-3	1.6E-02	c	2.9E-01	c	8.4E-04	c	1.0E-02	c	3.4E-03	c	1.3E-02	c	8.4E-02	c								
1.2E+01	C 1.1E-03	C M	1	0.13	-Dibenz[a,e]pyrene	192-65-4	4.2E-02	c	1.8E+01	c	2.6E-03	c	1.1E-02	c	6.5E-03	c	1.2E+01		1.2E+01									
2.5E+02	C 7.1E-02	C M	1	0.13	-Dimethylbenz(a)anthracene, 7,12-	57-97-6	4.6E-04	c	8.4E-03	c	1.4E-05	c	1.7E-04	c	1.0E-04	c	9.9E-05	c	8.9E+01	c								
4.0E-02	I 4.0E-02	I V	1	0.13	-Fluoranthene	206-44-0	2.4E+03	n	3.0E+04	n	3.0E+04	n	3.0E+04	n	8.0E+02	n	8.5E+00	n	8.9E+01	n								
4.0E-02	I 4.0E-02	I V	1	0.13	-Fluorene	86-73-7	2.4E+03	n	3.0E+04	n	3.0E+04	n	3.0E+04	n	2.9E+02	n	5.4E+00	n	5.4E+00	n								
7.3E-01	E 1.1E-04	C M	1	0.13	-Indeno[1,2,3-cd]pyrene	193-39-5	1.6E-01	c	2.9E+00	c	9.2E-03	c	1.1E-01	c	3.4E-02	c	1.3E-01	c	6.0E-03	c								
2.9E-02	P 7.0E-02	A 4.0E-03	I V	1	0.13	-Methylnaphthalene, 1- -Methylnaphthalene, 2-	901-57-6	1.8E+01	c	7.3E+01	c	1.1E+00	c	3.6E+01	c	1.9E-01	n											
3.4E-05	C 2.0E-02	I 3.0E-03	I V	1	0.13	-Naphthalene	91-20-3	3.8E+00	c*	1.7E+01	c*	8.3E-02	c*	3.6E-01	c*	1.7E-01	c*	5.4E-04	c*	3.3E-03	c							
1.2E+00	C 1.1E-04	C 3.0E-02	I V	1	0.13	-Nitropyrene, 4-	57835-92-4	4.2E-01	c	1.8E+00	c	2.6E-02	c	1.1E-01	c	1.9E-02	c	1.2E+01		1.3E+01								
5.0E-03	I 2.0E-02	P 9.0E-03	I H	V	1	0.1	-Pyrene	129-00-4	1.8E+03	c	2.3E+04	n	1.2E+04	c	1.2E+02	c	4.0E+01	c	2.2E-01									
1.5E-01	I 1.5E-02	I V	1	0.1	Potassium Perfluorobutane Sulfonate	294-120-4	1.3E+03	n	1.6E+04	n	4.7E+02	c	7.0E+03	n	4.0E+02	c	2.6E+01	c	1.9E-03	c								
4.0E-03	I 4.0E-03	I V	1	0.1	Prometron	1610-18-0	9.5E+02	n	1.2E+04	n	2.5E+02	c	8.2E+01	n	2.5E+02	c	1.2E-01	n	9.0E-02	c								
4.0E-03	I 4.0E-03	I V	1	0.1	Propachlor	7287-19-6	3.3E+02	n	3.3E+03	n	3.0E+02	c	8.2E+01	n	6.0E+01	c	2.5E+02	c	1.5E-01	n								
5.0E-03	I 2.0E-02	I V	1	0.1	Propargite	3912-58-8	1.3E+03	n	1.6E+04	n	1.6E+02	c	8.2E+01	n	4.0E+01	c	4.5E-02	c	1.2E+01									
2.0E-02	I 2.0E-02	I V	1	0.1	Propazine	139-40-2	1.3E+03	n	1.6E+04	n	3.0E+02	c	8.2E+01	n	3.4E+02	c	3.0E-01	c	3.0E-01	c	2.2E-01							
2.0E-02	I 2.0E-02	I V	1	0.1	Propiconazole	122-42-9	1.3E+03	n	1.6E+04	n	8.2E+02	c	1.1E+04	n	3.5E+02	c	2.2E+02	c	6.9E-01	c	6.9E-01	c						
1.0E-01	X 1.0E+00	X V	1	0.1	Propionaldehyde	123-38-6	7.5E+01	n	3.1E+02	n	8.3E+00	n	3.5E+01	n	1.7E+01	n	3.4E-03	n										
1.0E-01	X 1.0E+00	X V	1	0.1	Propyl benzene	103-65-1	3.8E+03	ns	2.4E+04	ns	1.0E+03	n	4.4E+03	n	6.6E+02	n	6.0E+00	n	6.0E+00	n								
3.0E+00	I 2.7E-04	C 7.0E-01	I V	1	0.1	Propylene Glycol	57-55-6	1.3E+06	nn	1.6E+07	nn	2.8E+02	n	1.2E+00	n	4.0E+05	n	8.1E+01	n									
7.0E-01	I 2.0E+00	I V	1	0.1	Propylene Glycol Dinitrate	6423-43-4	3.9E+05	nn	1.6E+06	nn	2.8E-01	n	1.2E+00	n	3.2E+03	n	6.5E-01	n	6.5E-01	n								
2.4E-01	I 3.7E-06	I 3.0E-02	I V	1	0.1	Propylene Glycol Monomethyl Ether	107-98-2	4.1E+04	nn	3.7E+05	nn	2.1E+03	n	8.8E+03	n	3.2E+03	n	6.5E-01	n	5.6E-05	c							
7.5E-02	I 1.0E-03	I V	1	0.1	Propylene Oxide	75-56-9	2.1E+00	c	9.7E+00	c	7.6E-01	c	3.3E+00	c	2.7E-01	c	5.6E-05	c	1.2E+00									
1.0E-03	I 5.3E+05	I V	1	0.1	Propyzamide	23950-58-5	4.7E+03	n	6.2E+04	n	7.8E+01	n	1.2E+03	n	1.2E+03	n	1.2E+03	n	6.8E-03	n								
5.0E-04	I 1.0E-04	I V	1	0.1	Quinalphos	13593-03-8	3.2E+01	n	4.1E+02	n	5.7E+02	c	7.4E+03	n	5.1E+00	n	4.3E-02	n	7.8E-05	c	4.3E-02							

Key: I = IRIS; P = PPRTV; A = ATSDR; C = Cal EPA; X = APPENDIX PPRTV SCREEN (See FAQ #27); H = HEAST; F = See FAQ; J = New Jersey; O = EPA Office of Water; E = see user guide Section 2.3.5; L = see user guide on lead; M = mutagen; S = see user guide Section 5; V = volatile; R = RBA applied (See User Guide for Arsenic notice); c = cancer; n = noncancer; * = where: n SL < 100X c SL; ** = where n SL < 10X c SL; SSL values are based on DAF=1; m = Concentration may exceed ceiling limit (See User Guide); s = Concentration may exceed Csat (See User Guide)																			
SFO (mg/kg-day) <sup>-1</sup>	k <sub>e</sub> (ug/m <sup>3</sup> ) <sup>-1</sup>	IUR (ug/m <sup>3</sup> -day)	k <sub>e</sub> RID <sub>c</sub> y	k <sub>e</sub> RIC <sub>c</sub> y	k <sub>e</sub> vo l	muta- gen	GIABS	ABS	C <sub>sat</sub> (mg/kg)	Contaminant		Screening Levels					Protection of Ground Water SSLs		
										Analyte		CAS No.	Resident Soil (mg/kg) key	Industrial Soil (mg/kg) key	Resident Air (ug/m <sup>3</sup> ) key	Industrial Air (ug/m <sup>3</sup> ) key	Tapwater (ug/L) key	MCL (ug/L)	Risk-based SSL (mg/kg) key
2.7E-01	H	3.0E-02	I	1	0.1					Sodium Diethylthiocarbamate	148-18-5	2.0E+00	c	8.5E+00	n	2.9E-01	c	1.8E-04	c
		5.0E-02	A	1.3E-02	C	1				Sodium Fluoride	7681-49-4	3.9E+03	n	5.8E+04	n	1.4E+01	n	4.0E-01	n
		2.0E-05	I	1	0.1					Sodium Fluoroacetate	62-74-8	1.3E+00	n	1.6E+01	n	4.0E-01	n	8.1E-05	n
8.0E-04	H	1.0E-03	H	1						Sodium Metavanadate	13718-26-8	7.8E+01	n	1.2E+03	n	2.0E+01	n		n
		8.0E-04	P	1						Sodium Tungstate	13472-45-2	6.3E+01	n	9.3E+02	n	1.6E+01	n		n
		8.0E-04	P	1						Sodium tungstate Dihydrate	10213-10-2	6.3E+01	n	9.3E+02	n	1.6E+01	n		n
2.4E-02	H	3.0E-02	I	1	0.1					Stroflos (Tetrachlorovinphos)	961-11-5	2.3E+01	c*	9.6E+01	c	2.8E+00	c	8.2E-03	c
		5.0E-01	C	1.5E-01	C	2.0E-04	C	M	0.025	Strontium Chromate	7789-06-2	3.0E-01	c	6.2E+00	c	8.2E-05	c	4.1E-02	c
		6.0E-01	I	1						Strontium, Stable	7440-24-6	4.7E+04	n	7.0E+05	nm	1.2E+00	n	4.2E+02	n
3.0E-04	I	1.0E-03	I	1	0.1					Strychnine	57-24-9	1.9E+01	n	2.5E+02	n	5.9E+00	n	6.5E-02	n
		2.0E-01	I	1.0E+00	I	V	1			Styrene	100-42-5	6.0E+03	ns	3.5E+04	ns	1.0E+03	n	1.2E+03	1.0E+02
		3.0E-03	P	1	0.1					Styrene-Acrylonitrile (SAN) Trimer	NA	1.9E+02	n	2.5E+03	n	4.8E+01	n	1.3E+00	1.1E-01
8.0E-04	P	1.0E-03	X	1	0.1					Sulfane	126-33-0	6.3E+01	n	8.2E+02	n	2.1E+00	n	8.8E+00	n
		8.0E-04	P	1	0.1					Sulfonfonyl(4-chlorobenzene), 1,1'-	80-07-9	5.1E+01	n	6.6E+02	n	1.1E+01	n	6.5E-02	n
		1.0E-03	C	V	1					Sulfur Trioxide	7446-11-9	1.4E+06	nm	6.0E+06	nm	1.0E+00	n	2.1E+00	n
1.0E-03	C	5.0E-02	H	1	0.1					Sulfuric Acid	7664-93-9	1.4E+06	nm	6.0E+06	nm	1.0E+00	n	4.4E-03	n
		3.0E-02	H	1	0.1					Sulfuric acid, 2-chloroethyl 2-[4-(1,1-dimethylethyl)phenoxy]-1-methylethyl ester	140-57-8	2.2E+01	c	9.2E+01	c	4.0E-01	c	1.3E+00	c
		1.0E-03	C	1						TCTMTB	21564-17-0	1.9E+03	c	2.5E+04	n	4.8E+02	n	3.3E+00	n
7.0E-02	I	7.1E-06	I	1	0.1					Tebuthuron	34014-18-1	4.4E+03	n	5.7E+04	n	1.4E+03	n	3.9E-01	n
		2.0E-02	H	1	0.1					Teniposid	3383-96-8	1.3E+03	n	1.6E+04	n	4.0E+02	n	7.6E+01	n
		1.3E-02	I	1	0.1					Terbacil	5902-51-2	8.2E+02	c	1.1E+04	n	2.5E+02	n	7.5E-02	n
2.5E-02	I	5.0E-02	H	V	1	3.1E+01				Terbufos	13071-79-9	2.0E+00	n	2.9E+01	n	2.4E-01	n	5.2E-04	n
		2.0E-02	I	1	0.1					Terbutryl	886-50-0	6.3E+01	n	8.2E+02	n	1.3E+01	n	1.9E-02	n
		1.0E-04	I	1	0.1					Tetrabromodiphenyl ether, 2,2',4,4'- (BDE-47)	5436-43-1	6.3E+00	n	8.2E+01	n	2.0E+00	n	5.3E-02	n
2.6E-02	I	7.4E-06	I	1	0.1					Tetrachlorobenzene, 1,2,4,5-	95-94-3	2.3E+01	n	3.5E+02	n	1.7E+00	n	7.9E-03	n
		2.0E-02	I	1	0.1					Tetrachloroethane, 1,1,1,2-	630-20-6	2.0E+00	c	8.8E+00	c	3.8E-01	c	2.2E-04	c
		2.0E-01	C	5.0E-02	I	V	1	1.9E+03		Tetrachloroethane, 1,1,2,2-	79-34-5	6.0E+01	c	2.7E+00	c	4.8E-02	c	3.0E-05	c
2.1E-03	I	2.6E-07	I	6.0E-03	I	4.0E-02	I	V	1	Tetrachloroethylene	127-18-4	2.4E+01	c**	1.0E+02	c**	1.1E+01	c**	5.0E+00	5.1E-03
		3.0E-02	I	1	0.1					Tetrachlorophenol, 2,3,4,6-	58-90-2	1.9E+03	n	2.5E+04	n	4.2E+02	n	1.8E-01	n
		2.0E+01	H							Tetrachlorotoluene, p-, alpha, alpha, alpha-	5216-25-1	3.5E-02	c	1.6E-01	c	1.3E-03	c	4.5E-06	c
5.0E-04	I	8.0E-04	I	1	0.1					Tetraethyl Dithiopyrophosphate	3689-24-5	3.2E+01	n	4.1E+02	n	1.7E+00	n	5.2E-03	n
		2.0E-03	P	8.0E+01	I	V	1	2.1E+03		Tetrafluoroethane, 1,1,1,2-	811-97-2	1.0E+05	nms	4.3E+05	nms	8.3E+04	n	1.7E+05	n
		2.0E-03	P	7E-04						Tetrafluoropropene	479-45-8	1.6E+02	n	2.3E+03	n	3.9E+01	n	3.7E-01	n
2.0E-05	S	1.0E-04	I	V	1					Thallic Oxide	1314-42-5	1.6E+00	n	2.3E+01	n	4.0E-01	n		n
		1.0E-05	X	1						Thallium (I) Nitrate	10102-45-1	7.8E-01	n	1.2E+01	n	2.0E-01	n	8.3E-05	n
		1.0E-05	X	1						Thallium (Soluble Salts)	7440-28-0	7.8E-01	n	1.2E+01	n	2.0E-01	n	2.0E+00	1.4E-02
1.0E-05	X	1.0E-05	X	V	1					Thallium Acetate	563-18-8	7.8E-01	n	1.2E+01	n	2.0E-01	n	4.1E-05	n
		2.0E-05	X	V	1					Thallium Carbonate	653-73-9	1.6E+00	n	2.3E+01	n	4.0E-01	n	8.3E-05	n
		1.0E-05	X	1						Thallium Chloride	7791-12-0	7.8E-01	n	1.2E+01	n	2.0E-01	n		n
1.3E-05	S	1.0E-05	S	1						Thallium Selenite	12039-52-0	7.8E-01	n	1.2E+01	n	2.0E-01	n		n
		2.0E-05	X	1						Thallium Sulfate	7446-18-6	1.6E+00	n	2.3E+01	n	4.0E-01	n		n
		1.3E-02	I	1	0.1					Thifensulfuron-methyl	7440-27-3	8.2E+02	n	1.1E+04	n	2.6E+02	n	7.8E-02	n
1.0E-02	I	1.0E-02	I	V	1	0.1				Thiobencarb	20249-77-6	3.2E+02	n	8.2E+03	n	1.6E+02	n	5.5E-01	n
		7.0E-02	X	1	0.008					Thiodiglycol	111-44-8	5.4E+03	n	7.9E+04	n	1.4E+03	n	2.8E-01	n
		3.0E-04	H	1	0.1					Thifoxanox	34918-18-4	1.9E+01	n	2.5E+02	n	5.3E+00	n	1.8E-03	n
8.0E-04	I	8.0E-02	I	V	1	0.1				Thiophanate, Methyl	23584-05-8	5.1E+03	n	6.6E+04	n	1.6E+03	n	1.4E+00	n
		5.0E-03	I	1	0.1					Thiram	137-26-8	3.2E+02	n	4.1E+03	n	9.8E+01	n	1.4E-01	n
		6.0E-01	H	1	0.1					Tin	7440-31-5	4.7E+04	n	7.0E+05	nm	1.2E+00	n	3.0E+03	n
1.1E-05	C	1.0E-04	A	V	1					Titanium Tetrachloride	7550-45-0	1.4E+05	nm	6.0E+05	nm	1.0E-01	n	7.6E-01	n
		8.0E-02	I	5.0E+00	I	V	1	8.2E+02		Toluene	108-88-3	4.9E+03	ns	4.7E+04	ns	5.2E+03	n	2.2E+04	n
		8.0E-06	C	V	1					Toluene-2,4-diisocyanate	584-84-9	6.4E+00	c	2.7E+01	n	8.3E-03	n	1.7E-02	n
1.8E-01	X	2.0E-04	X	1	0.1					Toluene-2,5-diamine	95-70-5	3.0E+00	**	1.3E+01	c*	4.3E-01	c**	1.3E-04	c**
		1.1E-05	C	8.0E-06	C	V	1	1.7E+03		Toluene-2,6-diisocyanate	91-08-7	5.3E+00	n	2.2E+01	n	8.3E-03	n	2.6E-04	n
		1.6E-02	P	5.1E-05	C	1	0.1			Toluidine, o- (Methylaniline, 2-)	95-53-4	3.4E+01	c	1.4E+02	c	5.5E-02	c	4.7E+00	c
3.0E-02	P	4.0E-03	X	1	0.1					Toluidine, p-	106-49-0	1.8E+01	c*	7.7E+01	c*	2.5E+00	c*	1.1E-03	c*
		3.0E+00	P	V	1	3.4E-01				Total Petroleum Hydrocarbons (Aliphatic High)	NA	2.3E+05	nms	3.5E+06	nm	6.0E+04	n	2.4E+03	n

Key: I = IRIS; P = PPRTV; A = ATSDR; C = Cal EPA; X = APPENDIX PPRTV SCREEN (See FAQ #27); H = HEAST; F = See FAQ; J = New Jersey; O = EPA Office of Water; E = see user guide Section 2.3.5; L = see user guide on lead; M = mutagen; S = see user guide Section 5; V = volatile; R = RBA applied (See User Guide for Arsenic notice); c = cancer; n = noncancer; * = where: n SL < 100X c SL; ** = where n SL < 10X c SL; SSL values are based on DAF=1; m = Concentration may exceed ceiling limit (See User Guide); s = Concentration may exceed Csat (See User Guide)																			
SFO (mg/kg-day) <sup>-1</sup>	IUR (ug/m <sup>3</sup> ) <sup>-1</sup>	k <sub>e</sub> y (ug/kg-day)	k <sub>e</sub> Rf <sub>c</sub> y (mg/m <sup>3</sup> ) <sup>-1</sup>	k <sub>e</sub> o muta- gen	GIABS	ABS	C <sub>sat</sub> (mg/kg)	Contaminant		Screening Levels									
								Analyte		CAS No.	Resident Soil (mg/kg) key	Industrial Soil (mg/kg) key	Resident Air (ug/m <sup>3</sup> ) key	Industrial Air (ug/m <sup>3</sup> ) key	Tapwater (ug/L) key	MCL (ug/L)	Risk-based SSL (mg/kg) key	MCL-based SSL (mg/kg)	
7.0E-03	X	3.0E-05	X	1	0.1			Trichloroaniline, 2,4,6-Trichlorobenzene, 1,2,3-	634-93-5 87-61-6	1.9E+00 6.3E+01	n n	2.5E+01 9.3E+02	n n	4.0E-01 7.0E+00	n	3.6E-03 2.1E-02	n		
2.9E-02	P	1.0E-02	I 2.0E-03 P V	1	4.0E+02	Trichlorobenzene, 1,2,4-	120-82-1	2.4E+01 8.1E+03 1.1E+00	c** ns c**	1.1E+02 ns ns	c** 5.2E+03 1.8E-01	n 2.2E+04 c**	8.8E+00 8.0E+03 7.7E-01	n 8.0E+03 7.8E-01	4.0E+01 2.0E+02 5.0E+00	3.4E-03 2.0E-01 8.9E-05	c** c** c**		
5.7E-02	I 1.6E-05	I 4.0E-03	I 2.0E-04 X V	1	2.2E+03	Trichloroethane, 1,1,2-	71-55-6 79-00-5	3.6E+04 3.5E+05	ns ns	5.2E+03 1.8E-01	n c**	2.0E+04 7.7E-01	n 7.8E-01	4.0E+01 2.8E-01	2.0E+02 8.0E+00 5.0E+00	3.4E-03 2.0E-02 1.6E-03	c** c** c**		
4.6E-02	I 4.1E-06	I 5.0E-04	I 2.0E-03 I V M	1	6.9E+02	Trichloroethylene	79-01-6	8.4E-01 2.3E+04 6.3E+03	c** ns ns	6.0E+00 3.5E+05 8.2E+04	c** ns n	4.8E-01 3.0E+00	c** ns	4.9E-01 5.0E+00	4.0E+00 5.0E+01	1.8E-04 3.3E+00 4.0E+00	c** c** c**	1.8E-03 2.8E-02 6.1E-02	
1.1E-02	I 3.1E-06	I 1.0E-03	P	1	0.1	Trichlorophenol, 2,4,6-	88-06-2	4.9E+01 6.3E+02 5.1E+02	c** n n	2.1E+02 8.2E+03 6.6E+03	c** n n	9.1E-01 1.0E+00	c 4.0E+00	c 4.1E+00	4.0E+03 5.0E+01	4.0E-03 6.8E-02 6.1E-02	c** c** c**		
3.0E+01	I	4.0E-03	I 3.0E-04 I V M	1	1.3E+03	Trichloropropane, 1,1,2-	598-77-6	3.9E+02 5.1E-03 7.3E-01	ns c n	5.8E+03 1.1E-01 3.1E+00	ns c ns	1.3E+00 1.3E+01 1.3E+00	n n n	8.8E+01 7.5E-04 6.2E-01	3.5E-02 3.2E-07 3.1E-04	n			
3.0E-03	X	3.0E-04 P V	1	3.1E+02	Trichloropropene, 1,2,3-	96-18-4 96-19-5	5.1E-03 7.3E-01	c n	3.1E+00 3.1E+01	ns ns	1.3E+00 1.3E+00	n n	7.5E-04 6.2E-01	c					
2.0E-02	A	7.0E-03	I V	1	0.1	Tricresyl Phosphate (TCP)	1330-78-5	1.3E+03 1.9E+02 1.2E+02	ns ns ns	1.6E+04 2.5E+03 4.8E+02	n n n	2.1E+04 3.1E+00	n n	1.6E+02 1.5E+01	n n	1.5E+01 1.3E-01 4.4E-03	n n n		
7.7E-03	I	7.5E-03	I V	1	4.8E+03	Tridiphane	58138-08-2	1.3E+03 1.9E+02 1.2E+02	ns ns ns	1.6E+04 2.5E+03 4.8E+02	n n n	1.8E+01 2.1E+00	n n	1.6E+02 1.5E+01	n n	1.5E+01 1.3E-01 8.4E-02	n n n		
2.0E+00	P	1.0E-02	P	1	0.1	Triethylamine	121-44-8	1.3E+05 9.0E+01	nm c**	1.6E+06 4.2E+02	nm c*	7.3E+00	n	3.1E+01	n	4.0E+04 4.2E+04 2.6E+00	8.8E+00 8.4E-02 c*	n	
7.7E-03	I	2.0E+01 P V	1	4.8E+03	Trifluoroethane, 1,1,1-Trifluoromethane	420-46-2 1582-09-8	1.5E+04 9.0E+01	ns c**	6.2E+04 4.2E+02	ns c*	2.1E+04 3.7E+00	n	8.8E+04 3.1E+01	n	4.0E+04 4.2E+04 2.6E+00	8.8E+00 8.4E-02 c*	n		
2.0E-02	P	1.0E-02	P	1	0.1	Trimethyl Phosphate	512-56-1	2.7E+01 4.9E+01 5.8E+01	c** n n	1.1E+02 2.1E+02 2.4E+02	c** c** <td>3.9E+00 1.0E+01 1.5E+01</td> <td>c** n n</td> <td>3.9E+00 2.2E+01 3.1E+01</td> <td>c** n n</td> <td>8.6E-04 1.5E-02 2.1E-02</td> <td>c** c** c**</td> <td>c** c** c**</td> <td></td>	3.9E+00 1.0E+01 1.5E+01	c** n n	3.9E+00 2.2E+01 3.1E+01	c** n n	8.6E-04 1.5E-02 2.1E-02	c** c** c**	c** c** c**	
5.0E-03	P	5.0E-03	P V	1	2.9E+02	Trimethylbenzene, 1,2,3-	520-73-0	2.7E+01 4.9E+01 5.8E+01	c** n n	5.2E+00 5.2E+00	c** c*	2.2E+01 3.7E+00	n	1.0E+01 3.1E+01	n	1.7E+02 1.5E+01 2.1E+02	n		
7.0E-03	P	7.0E-03	P V	1	2.2E+02	Trimethylbenzene, 1,2,4-	525-93-6	2.7E+01 4.9E+01 5.8E+01	c** n n	5.2E+00 5.2E+00	c** c*	2.2E+01 3.7E+00	n	1.0E+01 3.1E+01	n	1.7E+02 1.5E+01 2.1E+02	n		
1.0E-02	X	V	1	1.8E+02	Trimethylbenzene, 1,3,5-	108-67-8	7.8E+02 7.8E+02 2.2E+03	ns ns n	1.2E+04 1.2E+04 3.2E+04	ns ns n	1.2E+04 1.2E+04 3.2E+04	n	1.2E+02 6.5E+01 5.9E+02	n	1.7E+01 2.2E+01 2.1E+00	n			
1.0E-02	X	V	1	3.0E+01	Trimethylpentene, 2,4,4-	25167-70-8	7.8E+02 7.8E+02 2.2E+03	ns ns n	1.2E+04 1.2E+04 3.2E+04	ns ns n	1.2E+04 1.2E+04 3.2E+04	n	1.2E+02 6.5E+01 5.9E+02	n	1.7E+01 2.2E+01 2.1E+00	n			
3.0E-02	I	5.0E-04	I	1	0.032	Trinitrotoluene, 2,4,6-Triphenylphosphine Oxide	110-96-7	2.1E+01 1.3E+03 1.3E+03	c** n n	9.6E+01 1.6E+04 1.6E+04	c** n n	8.8E+00 3.6E+02 3.6E+02	n	2.5E+00 3.6E+02 3.6E+02	c** n n	1.5E-02 1.5E+00 8.0E+00	c** c** c**	c** c** c**	
2.3E+00	C 6.6E-04	C	V	1	4.7E+02	Tris(1-chloro-2-propyl) Phosphate	13674-87-8	6.3E+02 1.2E+02 2.7E+01	ns ns ns	8.2E+03 1.1E+02 1.1E+02	ns ns ns	1.9E+00 2.1E+00 2.1E+00	n n n	1.9E+02 1.6E+03 3.8E+00	n n n	6.5E-01 1.3E-04 3.8E-03	n c c*	n c c*	
2.0E-02	P	7.0E-03	P	1	0.1	Tris(2-chloroethyl) phosphate	741-28-6	1.3E+03 1.3E+03	ns ns	1.6E+04 1.6E+04	ns ns	1.8E+00 1.8E+00	n n	3.6E+02 3.6E+02	n	1.5E+00 8.0E+00	c** c**	c** c**	
3.2E-03	P	1.0E-01	P	1	0.1	Tris(2-ethylhexyl) phosphate	7440-13-7	1.7E+02 6.3E+01 2.3E+02	c** n ns	7.2E+02 9.3E+02 4.2E-02	c n n	1.0E+01 1.0E+01 1.8E-01	n n n	2.4E+01 1.6E+01 6.0E+01	n	1.2E+02 2.4E+00 2.7E+01	c** c** c**	c** c** c**	
8.3E-03	P	9.0E-03	I 7.0E-06 P	M	0.026	Tungsten (Soluble Salts)	51-79-6 1314-62-1 7440-62-2	1.2E+01 4.6E+02 3.9E+02	c c** n	2.3E+00 2.0E+03 5.8E+03	c c** n	3.5E-03 3.4E-04 1.0E-01	c c** n	2.5E-02 1.5E-02 8.6E+01	n	5.6E-06 1.3E-04 8.6E+01	c c c	c c c	
5.0E-03	S	5.0E-03	I 1.0E-04 A	A	0.026	Vanadium Pentoxide	1929-77-7	7.8E+01 9.1E+02	n ns	1.2E+03 3.8E+03	n ns	1.2E+03 2.1E+02	n n	1.1E+01 8.8E+02	n	8.9E-03 8.7E-02	n		
2.5E-02	I	2.5E-02	I	1	0.1	Vincladolin	50471-44-8	1.6E+03 1.6E+03	n n	2.1E+04 2.1E+04	n n	4.4E+02 4.4E+02	n n	4.4E+02 4.4E+02	n	3.4E-01 3.4E-01	n		
1.0E+00	H	1.0E+00	H 2.0E-01 I V	1	2.8E+03	Vinyl Acetate	108-05-4	3.8E+03 9.1E+02	ns ns	2.1E+02 3.8E+03	ns ns	8.8E+02 4.1E+02	n n	8.8E+02 8.7E-02	n				
3.2E-05	H	3.0E-03	I V	1	2.5E+03	Vinyl Bromide	593-60-2	1.2E+01 5.9E+02	c** c	5.2E+01 1.7E+00	c** c	8.8E-02 1.7E-01	c c	3.8E-01 2.8E+00	c** c	5.1E-05 6.5E-06	c** c	c** c	
7.2E-01	I 4.4E-06	I 3.0E-03	I 1.0E-01 I V M	1	3.9E+03	Vinyl Chloride	75-01-4 81-81-2	1.9E+01 1.9E+01	c** n	3.4E-04 1.0E-01	c** n	1.5E-03 4.4E-01	c n	1.5E+02 8.6E+01	c** n	2.0E+00 5.9E-03	6.9E-04	c** c	
2.0E-01	S 1.0E-01 S V	1	3.9E+02	Xylene, P-	106-42-3	5.6E+02 5.5E+02	ns ns	2.4E+03 2.4E+03	ns ns	1.0E+02 1.0E+02	n n	4.4E+02 4.4E+02	n n	1.9E+02 1.9E+02	n	1.9E-01 1.9E-01	n		
2.0E-01	S 1.0E-01 S V	1	3.9E+02	Xylene, m-	108-38-3	5.5E+02 5.3E+02	ns ns	2.4E+03 2.4E+03	ns ns	1.0E+02 1.0E+02	n n	4.4E+02 4.4E+02	n n	1.9E+02 1.9E+02	n	1.9E-01 1.9E-01	n		
2.0E-01	S 1.0E-01 S V	1	4.3E+02	Xylene, o-	95-47-6	6.5E+02 6.5E+02	ns ns	2.8E+03 2.8E+03	ns ns	1.0E+02 1.0E+02	n n	4.4E+02 4.4E+02	n n	1.9E+02 1.9E+02	n	1.9E-01 1.9E-01	n		
2.0E-01	I 1.0E-01 I V	1	2.6E+02	Xylenes	1330-20-7	5.8E+02 5.3E+02	ns ns	2.5E+03 2.4E+03	ns ns	1.0E+02 1.0E+02	n n	4.4E+02 4.4E+02	n n	1.9E+02 1.9E+02	n	1.0E+04	1.9E-01	n	9.9E+00
3.0E-04	I	1	1	Zinc Phosphide	1314-84-7	2.3E+01 2.3E+01	ns ns	3.5E+02 3.5E+02	ns ns	1.0E+02 1.0E+02	n n	6.0E+00 6.0E+00	n n	6.0E+00 6.0E+00	n	3.7E+02	n		
3.0E-01	I	1	1	Zinc and Compounds	7440-66-6	2.3E+04 2.3E+04	ns ns	3.5E+05 3.5E+05	ns ns	1.0E+02 1.0E+02	n n	6.0E+03 6.0E+03	n n	6.0E+03 6.0E+03	n	3.7E+02	n		
5.0E-02	I	1	0.1	Zineb	12122-67-7	3.2E+03 6.3E+00	n n	4.1E+04 9.3E+01	n n	1.8E-01 1.8E-01	n n	9.9E+02 1.6E+00	n n	9.9E+02 1.6E+00	n	2.9E+00 4.8E+00	n		
8.0E-05	X	1	1	Zirconium	7440-67-7														

**ATTACHMENT 2**  
**LABORATORY ANALYTICAL REPORT**  
(104 Pages)